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ANNUAL MEETING, SEPTEMBER 19-24, 1954, NEW YORK

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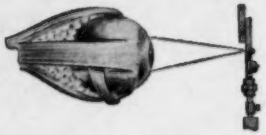

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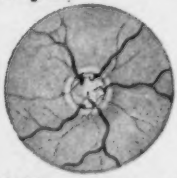

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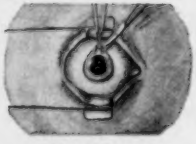

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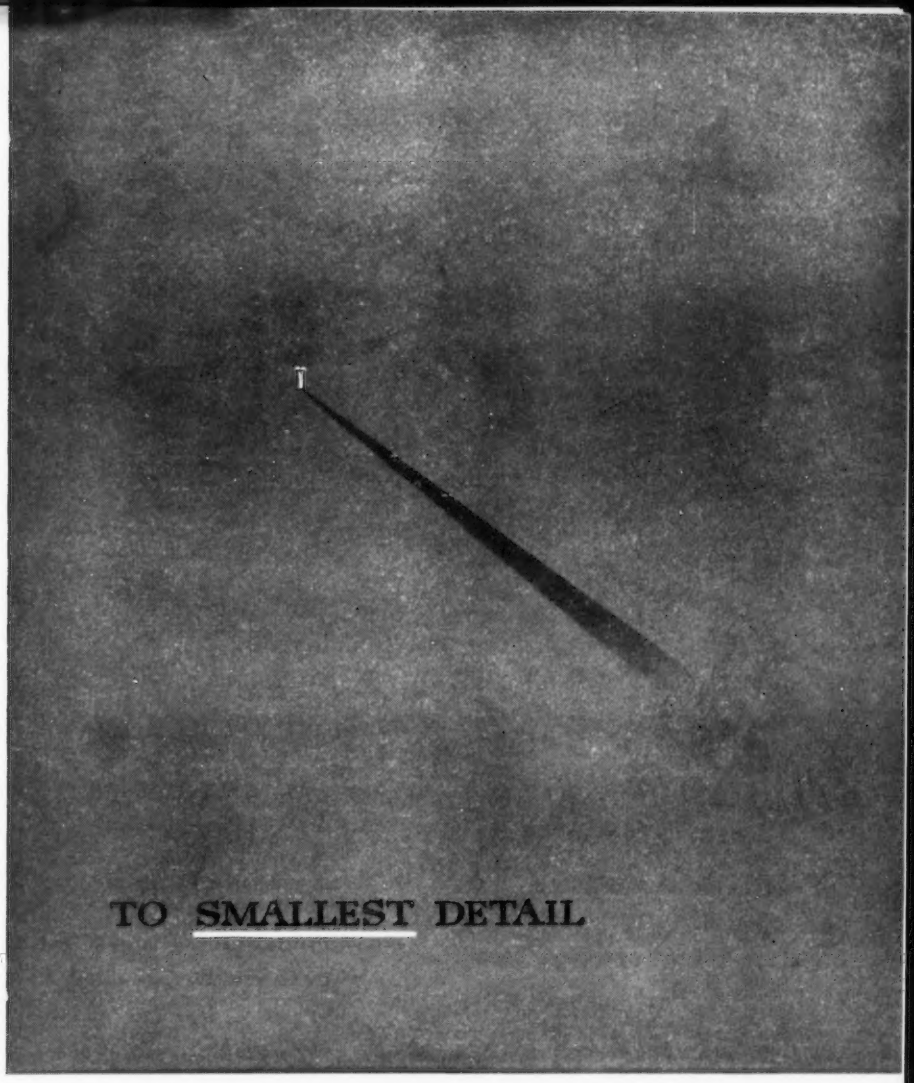

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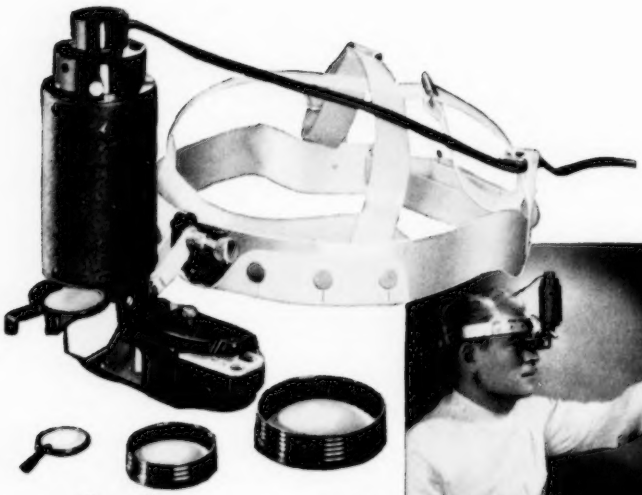

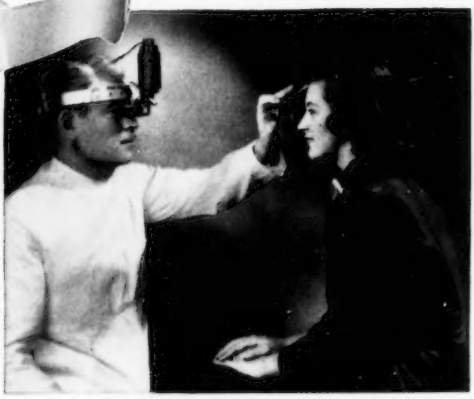

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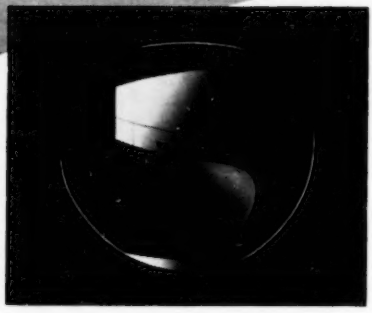

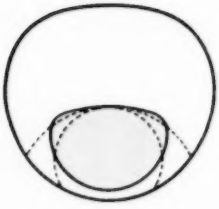

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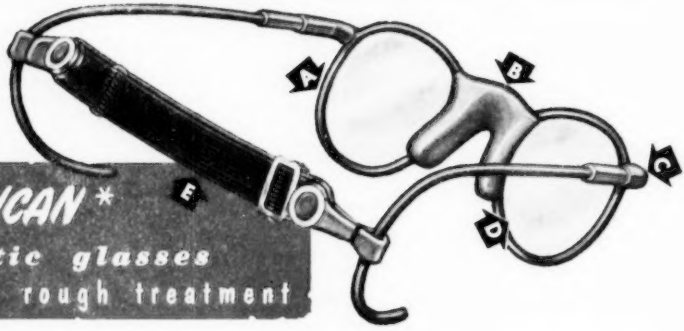

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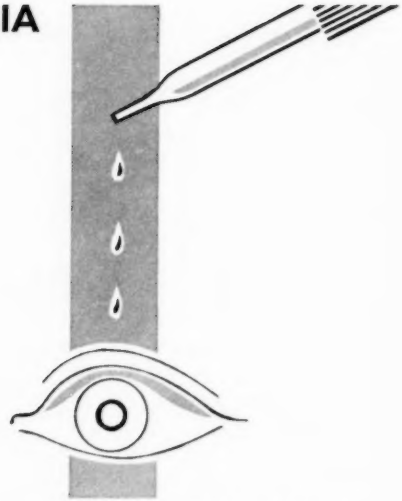

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*Schlegel, H. E., Jr., and Swan, K. C.: Dorsacaine for Rapid Anesthesia of the Cornea, read before the Section on Ophthalmology at the 102nd Annual Session of the American Medical Association, New York, June 4, 1953.

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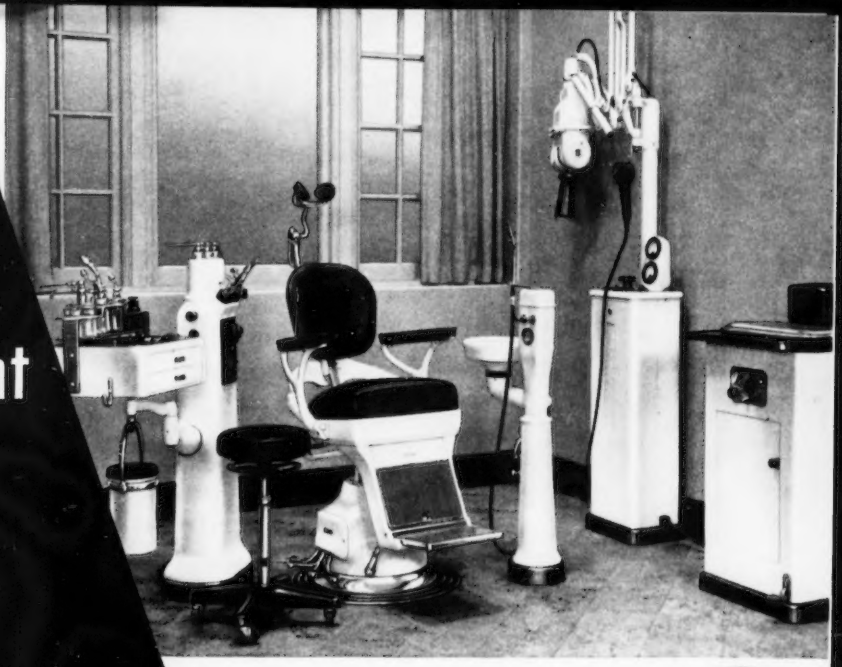

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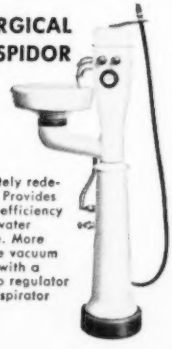

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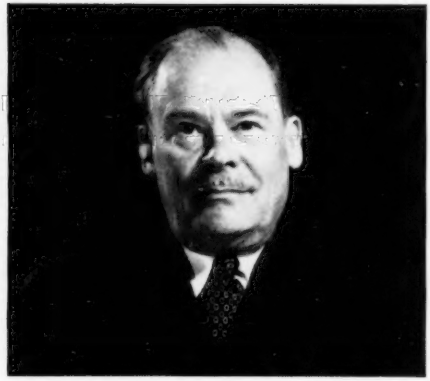

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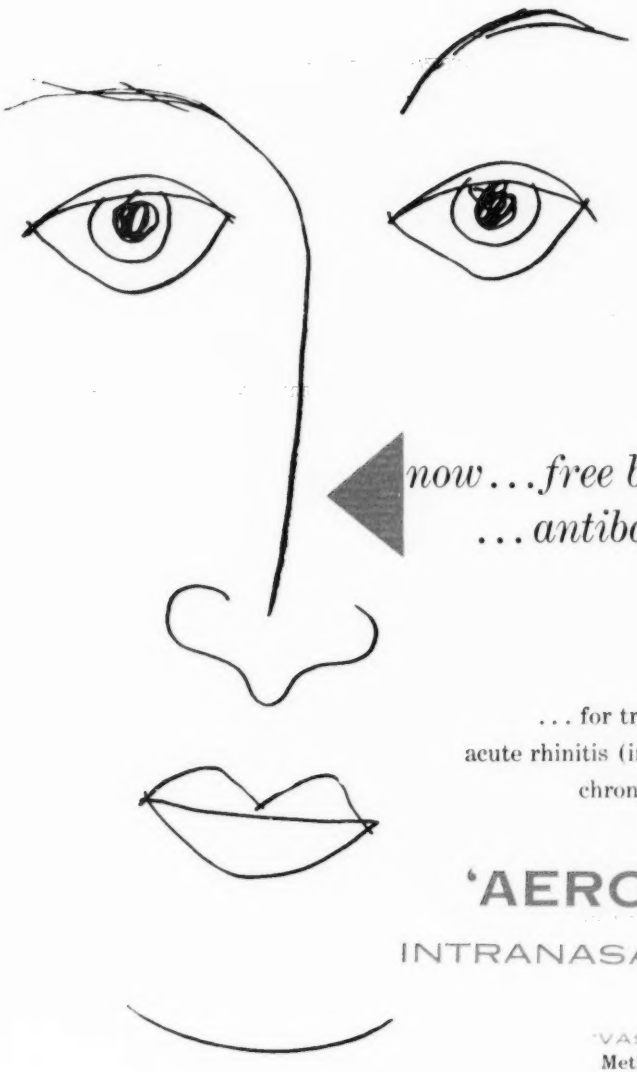

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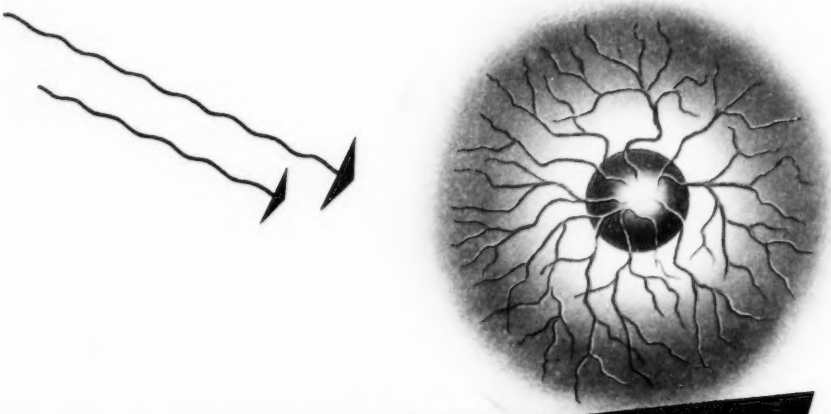

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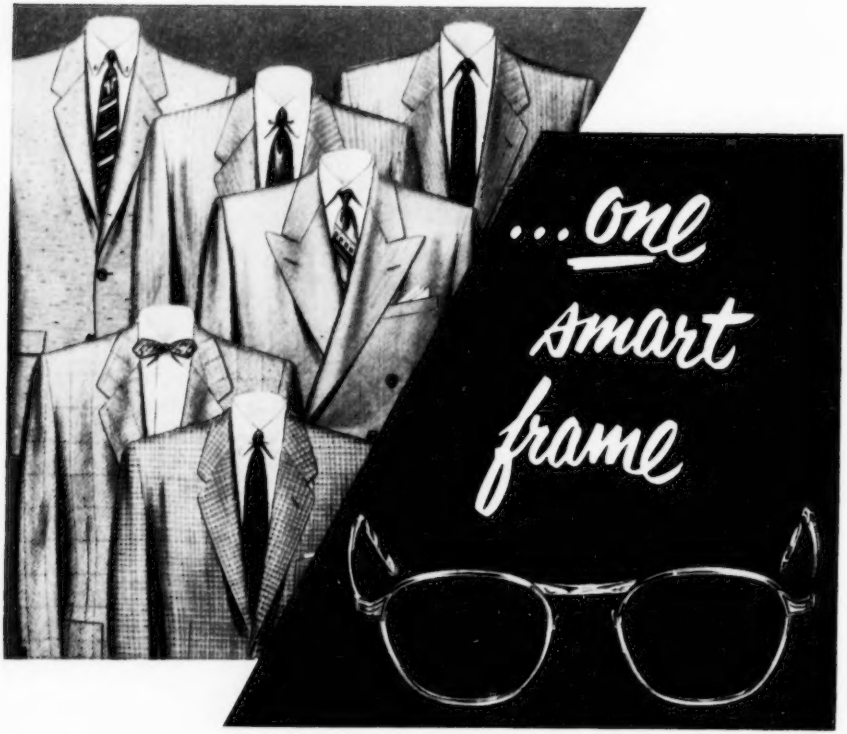

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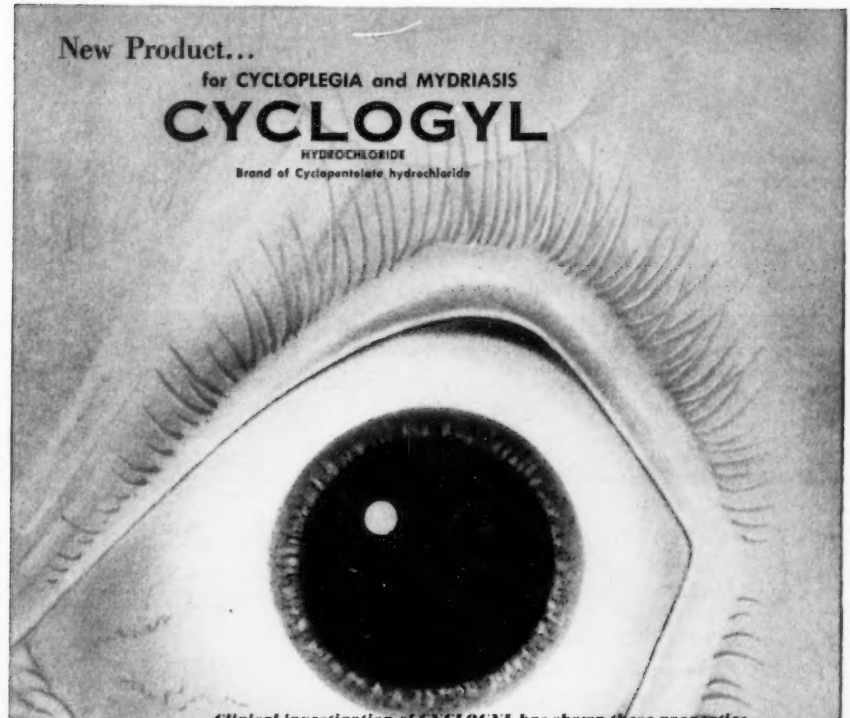

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1. Getter, B. C., and Leopold, I. H.: Arch of Ophth. 49:56 (Jan.) 1953.
2. Stoker, F. H.: Am. J. Ophth. (Jan.) 1953
3. Priestley, B. S., and Medine, W. N.: Am. J. Ophth. 36:522 (April) 1953

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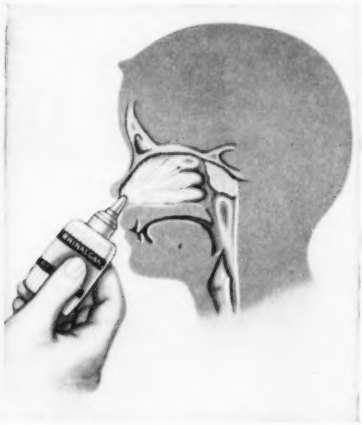

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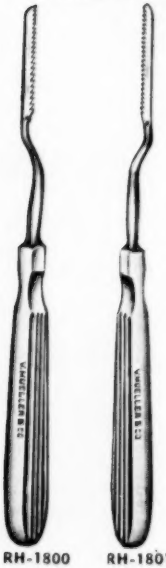

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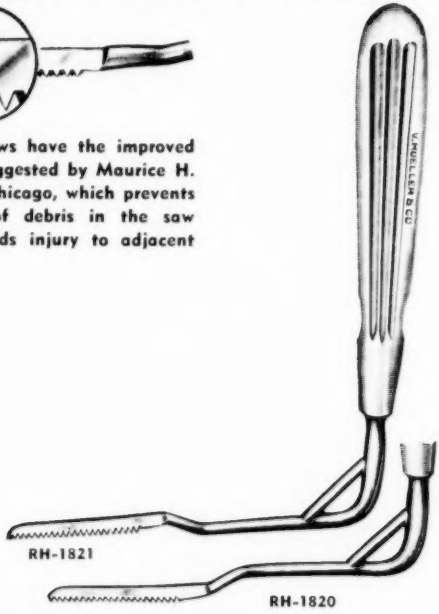

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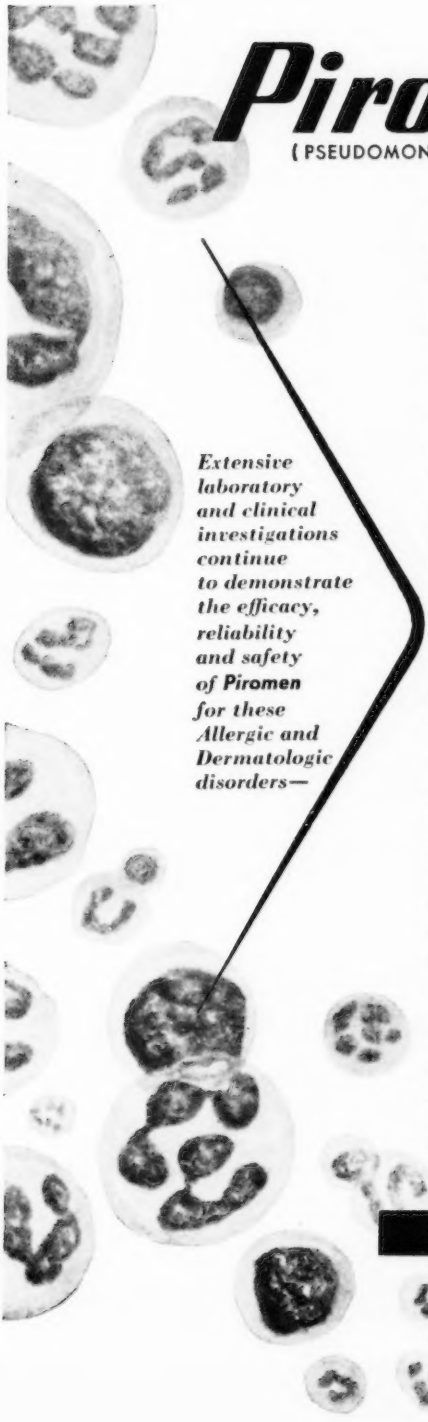

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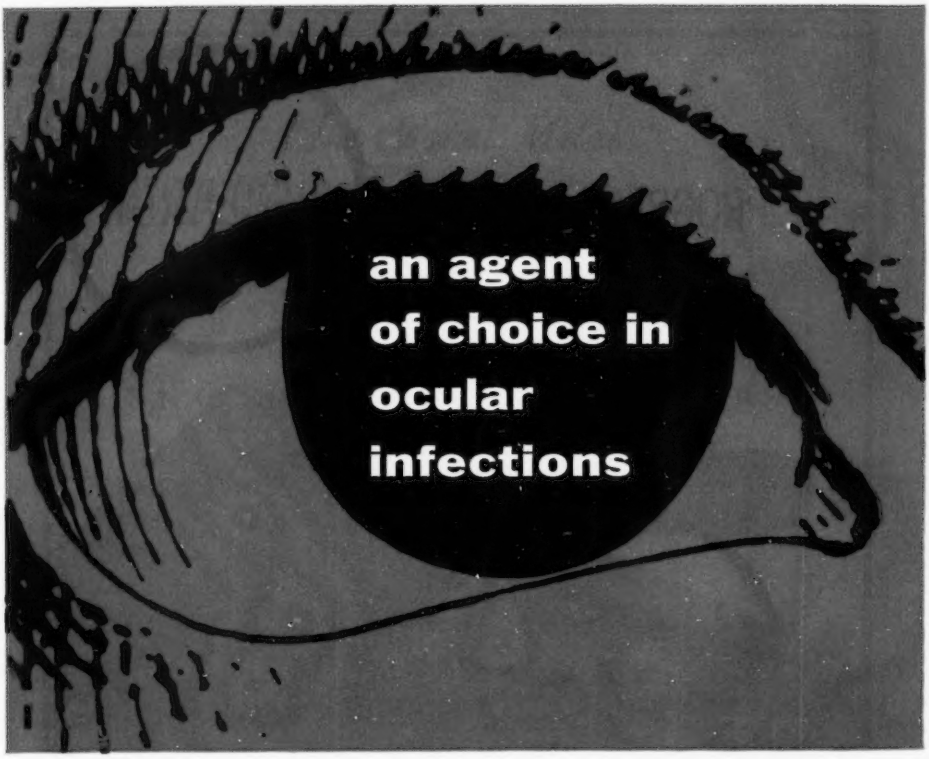

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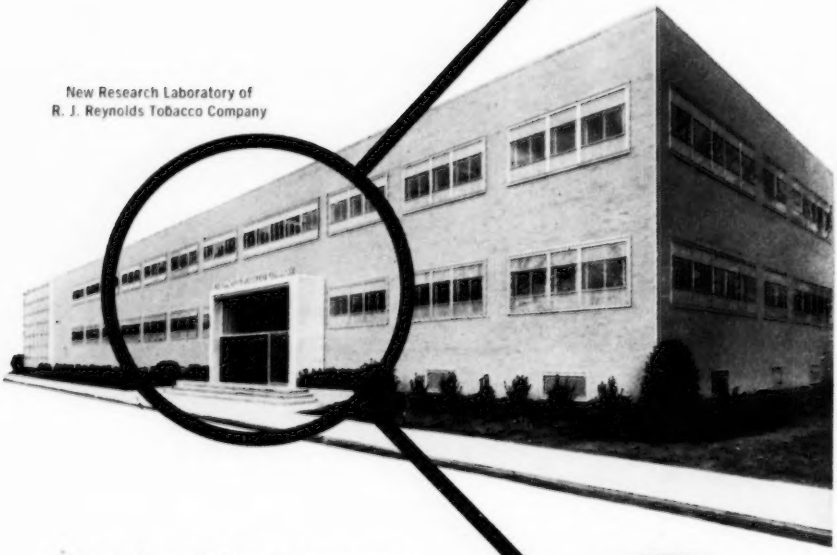

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VOLUME 57 SEPTEMBER - OCTOBER, 1953 NUMBER 5

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XVII INTERNATIONAL CONGRESS OF OPHTHALMOLOGY

A Message to North American Ophthalmologists

For the second time since the First International Congress of Ophthalmology was held in Brussels in 1857 will the official Congress be held on the North American continent. While the Congress is scheduled to be held every four years, only sixteen have been held to date and the Seventeenth Congress will take place in Montreal and New York in September, 1954. The previous International Congress of Ophthalmology held in America was the Fifth, held in New York City in 1876. Interruption of the succession of Congresses was the result of war between nations which precluded the attendance of delegates from a number of the nations whose national ophthalmological societies held membership in the International Federation of Ophthalmological Societies or at a time when international conventions were banned for one reason or another.

Many American and Canadian ophthalmologists have attended International Congresses in other countries and have built up a warm personal regard for their colleagues in other lands. Many of us have repeatedly visited clinics and hospitals in foreign cities and have studied under the able faculties of European institutions and private instructors. There has developed in the United States and Canada a strong desire to be hosts to the next International Congress and the decision of the International Council to include Canada in the XVII International Congress met with favor throughout the world. Ophthalmologists of the United States and Canada have everything in common that can possibly be shared by two nations. A reciprocal certification of specialists by the respective national specialty Boards of Ophthalmology and Otolaryngology is based on mutual respect of the integrity of the individuals and of the educational and training requirements and achievements of the two countries. As joint hosts to the XVII International Congress we extend a mutual welcome, a common hospitality and a single program.

While the extension of the Congress to Montreal makes it the longest session of record, the record number of papers, motion pictures, exhibits and anticipated attendance fully justify the two-day extension to the official meetings.

What will be the nature of the International Congress? The principal objective, of course, is to bring together, face to face, the leaders of ophthalmology throughout the world that they may know personally the authors of outstanding works with which they are more or less familiar. For panels for discussion of subjects of mutual interest, the announcement of new methods of investigation, of treatment, of results of prolonged observation under the varying conditions of life in countries throughout the world. For the opportunity of social intercourse, a mingling of the personalities of humanity, an exchange of views that broaden our concepts of human culture and make possible a fuller understanding of the responsibilities of our professional careers. For the privilege of entertaining in our country the men and women of nations of the world whose works are known through their writings and through chance meetings abroad, and to get to know the younger scientists who are to guide the program of medicine in the future. The Congress appeals particularly to the younger ophthalmologists and their contributions will be conspicuous on the scientific program. The Congress will be a revelation of all that is modern in ophthalmic science. There will be a camaraderie of spirit and of interest in the social and economic potentialities of a common purpose that guides our lives. There will be time for relaxation and enjoyment peculiar to the occasion as well as a scientific treat hitherto unexcelled.

The Congress deserves and will exemplify the united support of all North Americans. Late changes in plans have shortened the time of notification of the place and character of the meeting and, incidentally, added to the expense of the organizing committee. Your opportunity to take part in this Congress is unrestricted, your complete support solicited. Send your financial contribution and your advance registration at the earliest possible moment. All contributions will be personally acknowledged. Make your plans now for September, 1954. Bear in mind that the Academy meets the following week in the same place.

November 2, 1953

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Address of the President

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THE CERTIFICATE OF THE AMERICAN BOARD OF OPHTHALMOLOGY: AN EVALUATION

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IN VIEW of the importance that certification by the American Board of Ophthalmology has assumed in the life of the American ophthalmologist, it is my hope that a review of the history of the Board and of the significance of its certificate will seem in order on this occasion.

In 1913 the American Academy of Ophthalmology and Otolaryngology, the American Ophthalmological Society, and the Section on Ophthalmology of the American Medical Association appointed a joint committee to report on ophthalmic education. A year later this Committee recommended that medical schools of the first class establish graduate courses in ophthalmology which would culminate in the awarding of an appropriate degree two years after the student had completed the requirements for the degree of Doctor of Medicine. It was apparent, however, that this in itself would not ensure the adequate training of more than a very small group, nor would it fill the need for a means of differentiating between the competent and the incompetent ophthalmologist. In 1915 the Committee made further recommendations which resulted in the creation of a joint examining board composed of three representatives from each of the three special societies.

In 1916, after endless spade work, the examining board was organized as the "American Board for Ophthalmic Examination." This was the first of the specialty boards to be organized. Later the name was changed to "American Board of Ophthalmology," and in 1934 the organizational plan was expanded to provide for the election of four members from each of the component societies. Since then each society has elected one Board member each year to serve a four-year term. The policies and practices of the Board have evolved gradually over the years, and I am sure its first constituents had no conception whatever of the long-term effect on education its formation would have.

By definition the purposes of the Board were to elevate the standards of ophthalmic practice and to determine through examination the competence of practitioners aspiring or professing to be specialists in the field. In other words, as Dr. Lancaster put it, the purpose of the examination was to determine whether or not the candidate had met the current minimum requirements for competence in ophthalmic practice. The Board is strictly an examining group and makes no attempt to dictate to hospitals or other institutions what their training methods should be, and no attempt to grade residencies. In its experience, moreover, candidates from what might well be considered poor residencies have in some instances taken

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such excellent advantage of their opportunities as to give every evidence of good training.

The first examination was held in Memphis in 1916. Twelve candidates were examined and nine were passed and certified. Probably the most unusual examination was the one given to William L. Benedict in 1918. It was at the time of the influenza epidemic and he was the only candidate. The oral and written examinations were given in the home of John E. Weeks, and while taking the written examination Dr. Benedict was locked in the dining room while Dr. and Mrs. Weeks went to the hospital to see a granddaughter born that morning. I might add that Dr. Benedict passed.

When I took the examination in 1922 at the time of the American Medical Association meeting in St. Louis, there were thirteen candidates. The clinical examination was held in the morning and the three-hour written examination in the afternoon. Among the examiners I remember especially John E. Weeks, Walter R. Parker, John Green, Alan Greenwood and Walter B. Lancaster, and I recall with gratitude their fairness and gentleness in dealing with a very badly frightened candidate from the Far West. Of the thirteen who took the examination, five were passed and certified.

Since that time there have been many changes. As training facilities have improved, the examinations have become more comprehensive, and with the advance of ophthalmology, subjects have been added that were not included during the early years. Every effort has been made at all times to improve the examinations and to make them fair and impersonal; to this end the multiple answer system was recently adopted.

The written examination has been made a qualifying test to determine whether or not the candidate is ready for the practical examination. In some instances this prevents the humiliation of complete failure in the practical examination that can result from inadequate preparation. In February of this year 301 candidates took the written examination. Of this group 37 failed, 158 passed, and 106 were conditioned in one or more subjects. It is interesting that better preparation has resulted in a gradual decline in the percentage of failures.

Just a word about failures and conditions. They are looked upon by the Board as indications that the candidates are insufficiently prepared in the subject or subjects in which they have failed. Failure to qualify in the written examination usually means that there has been insufficient training in the basic sciences to give the candidate a clear understanding of the pathological processes underlying eye disease. If a weakness in one subject is shown by all the men from one institution, it may be assumed that the teaching of that subject has been neglected—a situation frequently corrected when called to the attention of the teaching department concerned.

Failure is regarded by the Board, and should be generally regarded, not as a disgrace but as a helpful indication that the candidate needs further training in one or more of the aspects of his specialty. For the preceptee who must get most of his training without the advantage of formal teaching, the examinations, both written and practical, are often the first opportunity he has had to evaluate his training. Conditioning or failure indicates deficiencies which he can then correct.

Let us now consider the effect that the establishment of the Board and the awarding of its certificate have had on American ophthalmology.

Before the Board was established very few residencies or house-officer appointments in ophthalmology were available. Many of the eye, ear, nose and throat specialists were men who had been general practitioners for a number of years and wanted an easier life. Many of them went to one of the so-called "six weeks specialists colleges," where they spent from six weeks to three months learning to be "specialists." These men were obviously poorly trained and on the average did inferior work.

This situation induced the majority of men seeking adequate training to turn to Europe, and especially to Vienna, where a conscientious effort was being made to offer postgraduate courses to foreigners, and to Americans in particular. There were some who studied for three months and then returned home as "Vienna-trained specialists," but the more serious student stayed at least a year. Most of the actual teaching was done by the clinical assistants, and on the whole the instruction was excellent. It was available in almost any subject at any time, however, and there was no long-range teaching plan to ensure systematic coverage of the whole field of ophthalmology. As a result the student who benefited most was the one who had had at least one year of training in his specialty before going abroad. He could then choose his courses intelligently and was better able to make the most of the material Vienna had to offer. The training was certainly superior to any available to the average student in this country, and a few fortunate individuals had the chance to work for a year or more as regular assistants in the clinics of Ernst Fuchs, Dimmer, Meller, or Lindner. Training facilities in other parts of Europe, and especially in England, were roughly comparable to those in Vienna.

In the last forty years American ophthalmologists, inspired at least in part by the Board examinations, and aided by the knowledge and experience gained on the continent and in England, have gradually evolved their own system of postgraduate training through the serving of residencies. The institution of formalized training dates from the organization of the Board in 1916, and under its influence progress has been continuous and has resulted in carefully planned and well-organized preparation; the Board examinations have shown, in turn, that the men trained by this system are for the most part well prepared.

Unfortunately there are not enough residencies to take care of the need so that training must still be obtained also through preceptorship and private practice association. Preceptees have in some instances done very well in their examinations; on one occasion the highest average grade was made by a preceptee from a southern state. In view of the decline of indigent patients, which is beginning to be felt in the outpatient departments of our institutions as a result of the various health insurance plans, one wonders if we may not be on the threshold of a more general return to this time-honored preceptorship method of training. In addition to his practical experience, the preceptee must also pursue a course in the basic sciences. To satisfy this requirement a number of extended institutional courses and the shorter very concentrated Lancaster Course are open to him. Parenthetically may I state my impression that there is increasingly an unfortunate tendency to regard the Lancaster Course as a tutoring course for the Board examinations. Its real function is to provide the student with a foundation in the scientific principles which underlie sound practice in ophthalmol-

ogy and upon which, with diligence, he can hope to build a thorough knowledge of his specialty.

In the 37 years of the Board's existence, 52 ophthalmologists have served as Board members. They have given a total of 105 examinations and have certified approximately 3,800 candidates. What, now, of the certificate itself?

During his three-year training period, the resident in ophthalmology tends to keep the attainment of the certificate before him as the principal goal of his residency. In the last six months' period, indeed, many residents make the mistake of devoting most of their time to studying for the examinations instead of concentrating on obtaining as much experience as possible in the examination and diagnosis of the patient. This misplaced emphasis shows up at the Board examination when a candidate who can give a textbook description of a fundus lesion or external ocular condition is unable to diagnose the lesion when he sees it in a patient. This defect was amply demonstrated in the examinations here in Chicago last year when more candidates were conditioned in ophthalmoscopy and external diseases than in any other subject.

All too frequently certification is looked upon as an ultimate goal instead of as a milestone in training and experience. Too often the new diplomate feels that the winning of the certificate precludes for him the necessity of continuing his study or of attempting to improve his knowledge. He often fails to realize that he has passed only the first hurdle and must continue to work unremittingly. He must keep in mind the fact that judgment, that indispensable factor in the making of any competent consultant, cannot possibly be acquired in a three-year training period but can come only as a result of experience to the practitioner who has remained the ardent student. Certification alone should not be regarded by the diplomate, or by anyone else, as the mark of a finished product. It is an indication only that the winner of the certificate has acquired the minimum in knowledge and experience essential to sound ophthalmic practice. Until he has been disciplined by experience, and by many years of study, certainty that his patient will receive the best care available must, indeed, rest in part on the diplomate's knowledge of his own limitations: he must know when the help of an established consultant is indicated.

Another misconception is that certification by the Board is a warranty of the diplomate's competence as an eye surgeon. It is obvious that in the time and with the facilities available at examination, it is impossible for the examiners to observe every candidate in the performance of the various surgical procedures employed in ophthalmology. In the letters of recommendation accompanying applications, the candidate is often referred to as "a competent surgeon" when he should more properly be considered "a good surgical technician." A competent ophthalmic surgeon is a good technician who has been seasoned by experience and humbled by his mistakes, and a number of years must necessarily elapse before the surgical competence of the graduated resident can fairly be determined.

Many candidates, moreover, have had no opportunity to obtain anything like adequate surgical training, and the current decline in the number of indigent patients will make it even more difficult for trainees to get surgical experience in the future. The following are examples of surgical lists drawn from the candidate training records that have been submitted to the Board:

One candidate whose training seemed adequate in other respects listed 39 surgical cases; of these 11 were "conjunctival" cases and 17 were "lid" operations. Another listed a total of 18 operations of which 9 were recorded as separate operations on different muscles on 6 patients; the other 9 were spastic entropion, ptosis, pterygia, removal of a fibrolipoma, repair of a perforation of the globe, and repair of a cicatricial entropion. Neither of these candidates had performed a cataract extraction, an operation for relief of glaucoma, or any detachment surgery. Quite obviously they could not be considered ophthalmic surgeons. Another candidate, an older than average man, had done only 8 minor operations during the previous two years. He understood the indications for surgery, however, and the care of the postoperative complications. He passed the remainder of his examination without difficulty and was certified. In the eyes of the Board this candidate was a competent ophthalmologist although not a competent ophthalmic surgeon.

So far as surgery is concerned, then, the certificate means only that the diplomate is familiar with the principles of ophthalmic surgery; it is in no way a reflection of his surgical skill. In an attempt to correct the rather general misconception on this point, the Board has changed the name of the surgical examination to "Principles of Surgery" and has done away with the animal eye surgical examination.

With more and more practitioners attempting surgery as a result of the present-day training methods, it would seem that the time may have come for certifying in some way or other those qualified to do eye surgery, especially intraocular surgery. The establishment of a fellowship in ophthalmic surgery by some such organization as the American College of Surgeons could serve to designate the qualified ophthalmic surgeon. To be meaningful such a fellowship should be granted only after the candidate's ability has been determined on the basis of actual observation of his technical skill in the operating room and a series of case reports attesting his knowledge and judgment.

That a misunderstanding of the significance of a Board certificate is not limited to Ophthalmology is indicated by the following editorial which appeared in the *Norfolk Medical News*, the publication of the Norfolk County (Massachusetts) Medical Society, in March 1952:

"I think that a false evaluation is commonly placed on the fact that a physician is a diplomate of one of the specialty boards. Too often the newly certified diplomate is looked upon as a fully competent consultant in a specialty whereas it only means he has fulfilled certain basic requirements in training and passed certain examinations satisfactorily."

Dr. Joshua C. Dickson, in his address as Chairman of the Section of Radiology of the American Medical Association, also pointed out the widespread misconception as to the significance of specialty board certification: "Certification means only that the young diplomate has completed the preliminaries of his specialty. Certification is his 'commencement.' In itself it no more fits him to be a hospital chief than Annapolis graduation fits a midshipman to be an admiral."

To increase further the requirements for certification would defeat the original purpose of the Board. There is at present a dangerous tendency in this direction, but in my opinion more rigorous requirements, or the establishment of more subspecialties, might result in the collapse of the whole examination structure. It is important to keep in mind that the function of the Board is to determine whether or not the oph-

thalmic practitioner has the minimum prerequisites for competence in his field.

The certificate of the American Board of Ophthalmology, then, is to be regarded as a testament of the members of the Board that the diplomate is competent to practice ophthalmology; and with respect to surgery it attests, not his surgical skill, but his understanding of the principles of ophthalmic surgery, its indications, complications, and postoperative requirements. In the life of the young American ophthalmologist certification is no more, and no less, than an important milestone—perhaps the most important milestone—on the long, hard road to his recognition as a full-fledged ophthalmic consultant.

METHOD OF TESTING VISUAL ACUITY IN CHILDREN

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TESTING the visual acuity of children is usually unreliable because of the variability of their responses and the difficulty of holding their attention. Difficulty in recognizing objects and properly naming them is a great failing in picture test charts. Probably the most reliable type of test is that taken with the illiterate E, because this test relies upon the child recognizing the limbs of the E and pointing out their direction. E charts, however, tend to confuse children because it may be impossible to cover all other E's except the one you are trying to test and the child may readily lose interest, as tends to occur when projected charts are used.

A method of testing used in our clinic consists of handing the child a large plastic letter E while the examiner holds a similar letter E before him. It is readily seen that the child may be shown how to turn his E to make it similar to the examiner's. As soon as this concept is understood, the examiner places a plastic E of definite size on a radiographic shadow box by means of an adhesive backing on the letter. He may then turn the letter in any direction and the child will respond by doing similarly. This test is then repeated with smaller and smaller letter E's, varying in size from 20/200 to 20/20, each with an adhesive backing. The letter may then be turned in any direction and the child's response is noted. This test is an interesting game for the child with a minimum of distraction and a great deal of accuracy. Children as young as 2 years old have been tested to 20/30 vision in each eye by this method.

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WHY I REMOVE THE MATRIX

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ST. LOUIS, MO.

THERE are two schools of thought in the matter of the surgical treatment of cholesteatoma of the middle ear and mastoid. Some, like Dr. Baron, believe that the epithelium of cholesteatoma matrix forms an ideal lining for the cavity resulting from a radical or modified radical mastoidectomy. Others, like myself, believe that every particle of cholesteatoma must be removed in order to ensure a cure of the mastoid disease and the subsequent safety of the patient. In this symposium each is presenting the reasons for his belief.

It has long been recognized that cholesteatoma and bone erosion coexist. Many considered that this erosion was due to pressure caused by desquamating epithelial cells which were unable to escape through the narrow communication with the external auditory canal. The theory of pressure necrosis, however, becomes untenable in the light of clinical experience. Cases are not infrequently seen in which a "radical operation" has been done but in which adequate removal of cholesteatoma from the antrum and middle ear has not been accomplished. These cases with no evidence of accumulation of desquamated epithelium will not infrequently develop a fistula into the labyrinth.

For example, E.K., a 12-year-old boy, was first seen in the Ear, Nose and Throat Clinic in December 1949. The past history was that he had a draining left ear since the age of 4, the result of measles. He had had some kind of operation on the ear when he was 4 years of age, but the ear continued to discharge and two years after that he had had a radical mastoidectomy performed. Since then the ear still continued to discharge. On examination in December 1949, the posterior part of the radical mastoidectomy cavity was found to be completely epithelialized and clean, but the middle ear and epitympanic regions contained granulations and foul pus. The cavity was treated by cleansing and various local medications. I first saw the boy in February 1950. At that time he complained of having occasional dizzy attacks for the past few months and he had a definitely positive fistula test. At operation a cholesteatoma was found in the antrum and middle ear, and on elevating the subepithelial matrix a fistula into the horizontal canal was found to be present. It seems impossible that this fistula could have been caused by pressure, because following his first radical mastoidectomy the cavity and middle ear were completely open to the outside and no accumulation of epithelial debris occurred in the middle ear. There were, however, granulations and suppuration still present. Many similar cases to this one have been seen in the Clinic and in my private practice.

A second case even more illustrative was that of a 46-year-old female first seen in the Clinic in 1942. She had a small attic perforation with choleste-

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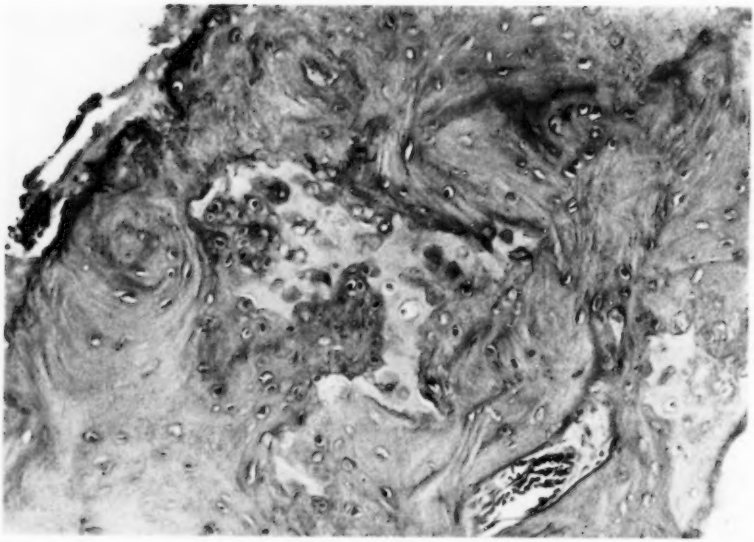

FIG. 1—Photomicrograph of an area in the body of the incus showing an early stage in the changes within the calcified cartilaginous rests. The calcified rests return to a hyaline state, the nuclei are irregular and variable in size and show a tendency to cluster in small groups.

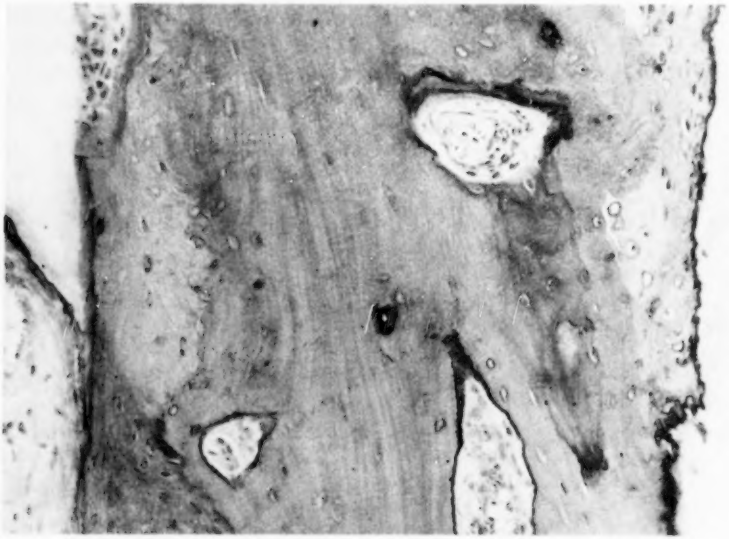

FIG. 2—Photomicrograph of an area through the long process of the incus to which a cholesteatotic process was attached. The bone is undergoing necrosis; the blood vessels are surrounded by invading matrix, and peripherally the cartilaginous rests are undergoing necrosis.

atoma and some discharge from the ear. Although advised to have surgery, she refused. The house officer taking care of her did a removal of the outer attic wall, in other words marsupialized the cholesteatoma, and after some cleaning and treatment she had a dry ear. She was next seen in 1947 when she came complaining of dizzy spells. On examination the ear was clean and dry. There was an epithelialized dry cavity in the attic-antrum region with no crusts, desquamation or discharge. When we examined the ear with a pneumatic otoscope, she displayed a marked positive fistula reaction. At operation the cholesteatoma matrix was elevated, and at the anterior end of the horizontal canal was an erosion which had gotten down to the "blue line." In this case neither pressure nor moisture could be blamed for the bony erosion.

Histologic examination of ossicles removed from cases of cholesteatoma is revealing. The outstanding feature of these ossicles was irregularity and the evidence of necrosis. The sequence of changes which led to this necrosis seemed to be, first, a return to a cartilaginous state of the calcified cartilaginous rests. Calcium seems to be lost and the nuclei of the cartilaginous rests become clumped and vary considerably in size (fig. 1). Necrosis results with a final disappearance of the rests. The subepithelial connective tissue (cholesteatotic matrix) invades the bone of the ossicles by direct extension along blood vessels (fig. 2) and may extend for a considerable distance beyond the immediate point of its entry. Osteoblastic and osteoclastic activity is in evidence (fig. 3). In some regions in which there is invasion of the fibrous connective tissue,

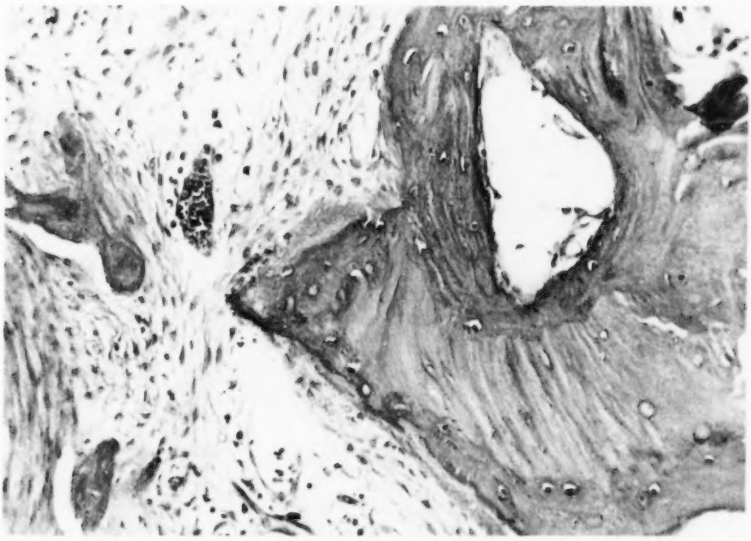

FIG. 3.—Photomicrograph of an area in the head of a malleus to which a cholesteatotic process was attached by its matrix. The matrix has invaded and replaced necrotic areas of the bone. There is some attempt at new bone formation by osteoblasts but the greater part of this ossicle was eroded.

new bone formation is to be found as well as osteoclastic activity, but the destruction of bone is much more in evidence than the laying down of new bone. There is some periosteal bone proliferation underlying the matrix, and it seems likely that this new bone is probably the result of infection and is responsible for the irregularities in the contour of the ossicles.

liferation is usually localized and immediately underlies the mucoperiosteum. Apparently it is also stimulated by cellular infiltration and edema of the mucous membrane. Replacement of necrotic areas of the bone by connective tissue occurs with final fragmentation and dissolution of the remaining bone. It is the enchondral layer of the bone which is primarily destroyed. The connective

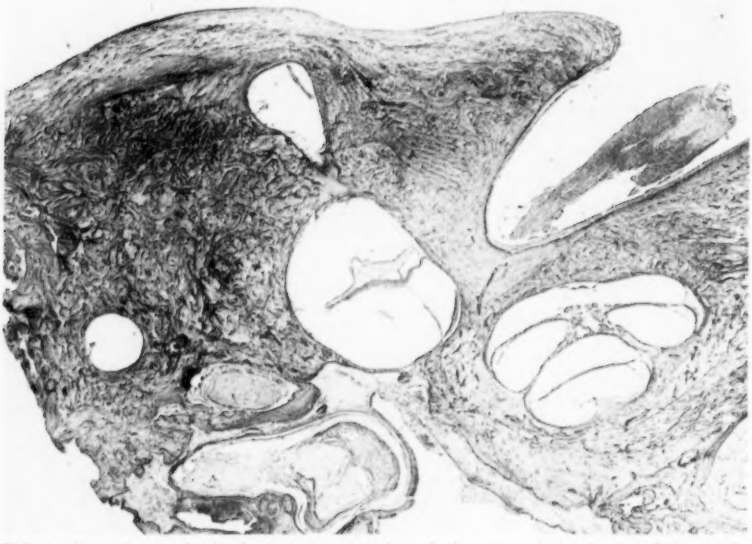

FIG. 4—Photomicrograph of a horizontal section through the petrous bone showing cholesteatotic mass in place in the tympanic cavity.

Various factors seem to be operative in the dissolution and necrosis of the bone. First, there seems to be an osteolytic process occurring in the calcified cartilaginous rests. The dissolution of bone also seems to be accomplished by the invading matrix. The actual process of osteoclasis seems to be stimulated by secondary infection, which may be an important factor. Interruption or interference with the blood supply of the ossicles may result in the deeper necrotic areas in the bone. Periosteal bone pro-

tissue matrix penetrates the periosteal layer through the blood vessels and the cartilaginous rests in the enchondral layer become necrotic and disappear.

The temporal bone of a 10½-year-old white female who died of lateral sinus thrombosis was examined and cholesteatoma was found in the middle ear cavity (fig. 4). This mass of cholesteatoma measured 5.7 mm. by 2 mm. The mucous membrane of the tympanic cavity is edematous and thickened. The following bony changes were found in this

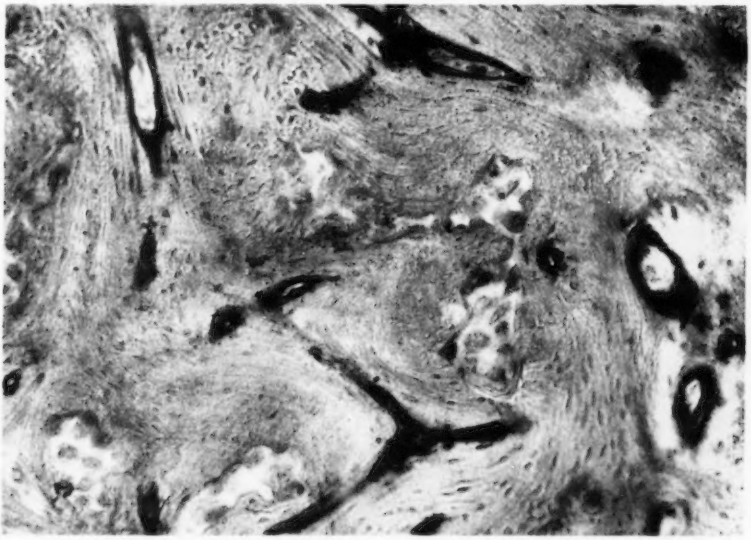

FIG. 5—Photomicrograph of enchondral layer of the capsule. The calcified cartilaginous rests are prominent but show no degenerative changes in this particular area. The bony channels for blood vessels show a deposit of deeply stained substance.

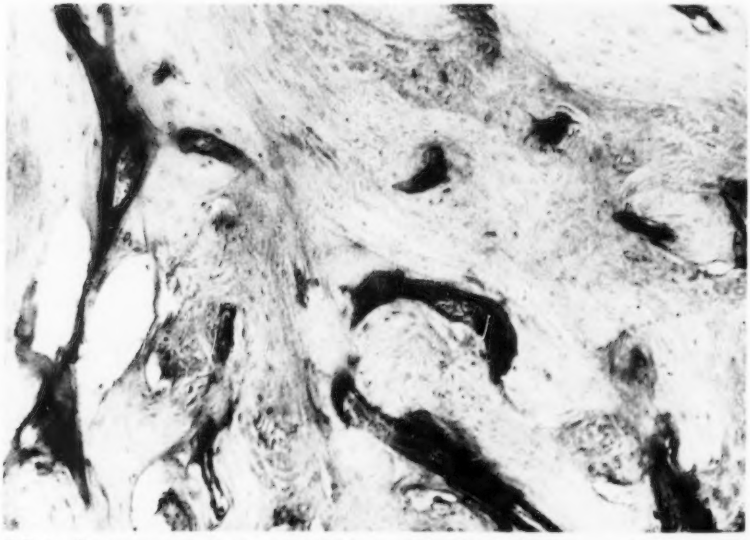

FIG. 6—Photomicrograph of the enchondral layer of the capsule showing necrosis of bone and disappearance of calcified cartilaginous rests. Areas occupied by blood vessels are represented by the darker stain.

specimen: (1) irregular periosteal bone proliferation which may be due to the inflammatory process and the stimulation of the periosteum to new bone formation, and (2) a blue staining substance about the blood vessels (figs. 5 and 6), areas of necrosis of bone, chiefly in the enchondral layer (fig. 7). This is considerably more pronounced than in most specimens of ossicles removed at the time of surgery. It is possible that some of the vascular changes may be due to septic thrombi in this instance. There is seen a penetration of matrix into the bone about the blood vessels (fig. 7). At times it is quite far removed from the point at which it originally started to invade. Necrosis of this bone is evident around such penetrating fingers of the matrix.

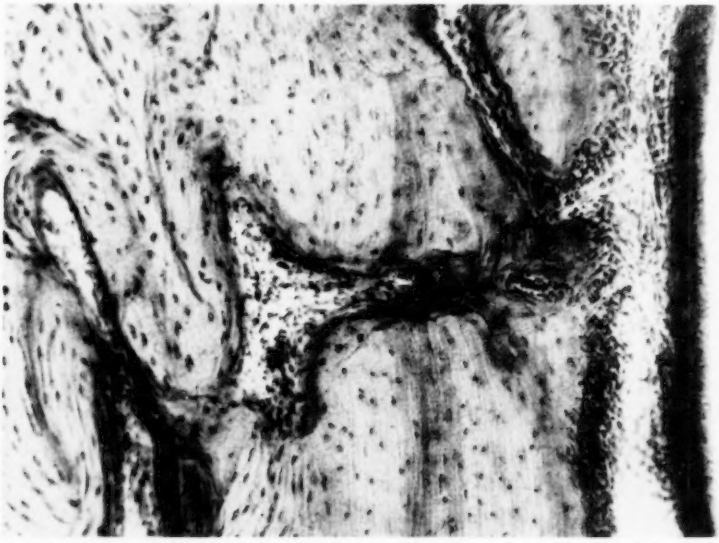

FIG. 7.—Photomicrograph of cholesteatotic matrix invading periosteal layer of capsule by following blood vessels.

Whether the bony necrosis which occurs under the cholesteatoma matrix is the result of interference with blood supply, is due to concurrent infection or is the result of some chemical osteolytic process is not known. In order to investigate the possibility of chemical lysis, normal ossicles, removed in the performance of fenestration operation, were immersed for varying periods in extracts of cholesteatoma. Similar ossicles were immersed in normal saline as controls. The ossicles were sectioned and compared. It was found that after incubation of an ossicle in filtrate from material obtained in cases of cholesteatoma, no striking histologic changes were found; however, when the experimental ossicles were compared to controls, there was an indication, though minor, of some slight alteration in the filtrate-treated ossicles. These changes were, briefly, that the bones stained poorly and in most instances were very

pale and unevenly stained. The calcified cartilaginous rests apparently had undergone some necrosis. There were areas of necrotic bone present in some specimens. These necrotic areas were located rather more deeply than superficially. The changes were not dramatic nor particularly significant, but it would seem that further investigation along this line might be worth while. To this end microchemical analysis has been made comparing the subepithelial matrix of cholesteatoma with the subepithelial connective tissue of normal skin. There are striking differences found in the amounts of enzymes such as aldolase and alkaline phosphatase, but at this time we are not clear as to the significance of these differences.

There is considerable clinical evidence that the theory of pressure necrosis as a cause for bone erosion in cholesteatoma is untenable. There is considerable histologic evidence that the matrix of cholesteatoma causes changes in the enchondral layer of bone leading to necrosis. There is some evidence indicating a chemical osteolytic process. In the light of this evidence the conclusion is inescapable that any surgical procedure which neglects the removal of the cholesteatoma matrix is inadequate. It is a sine qua non that any surgical procedure is aimed at preservation of function, but not at the risk of the patient's life and health.

Symposium: The Surgical Management of Aural Cholesteatoma

WHY AND WHEN I *DO NOT* REMOVE THE MATRIX

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THERE is no controversy that a cholesteatoma in the temporal bone is a dangerous lesion. There is, however, considerable controversy as to whether or not the matrix of the cholesteatoma is a hazard.

This presentation proposes to show that the matrix is not a dangerous structure and that it can be converted to a useful purpose. This statement is not meant to imply that the matrix should be preserved in all cases since there are situations in which it should be removed. These will be referred to later.

Basically, a temporal bone cholesteatoma is a cyst[3] with a stalk and a sac (fig. 1a). (Primary or unusual secondary cholesteatomas do not have a stalk, but these types are not under consideration here.) The stalk is usually connected to the margins of a tympanic perforation, most often in Shrapnell's membrane. The sac with its contents is a space-occupying tumor and may encroach upon any of the spaces or structures of the temporal bone. Its extension into bony structures is thought by Guild[9] and others[1] to be due to pressure from contents of the cyst, while some otologists, particularly Day[4] and Lindsay,[15] feel that moisture is the most important factor. Dr. Walsh's[31] views on extension have just been presented.

The sac has two layers: an outer layer of connective tissue attached to bone and an inner layer of stratified squamous epithelium continuous with that of the tympanic membrane and membranous external auditory canal wall (fig. 1b). The cyst wall, with its two layers, is known as the matrix. The contents of the cyst include concentric layers of cast-off epithelial cells in which may be fatty degeneration and cholesterin crystal formation.

If the lateral portion of the sac of the cyst is sliced off and the medial portion is allowed to remain in contact with the underlying structures, the cyst is said to be externalized or marsupialized (fig. 1b). In other words, the inner or medial wall is part of the matrix left in situ. (See figures 6 and 7.)

WHEN THE MATRIX SHOULD BE REMOVED

Before going into the preservation of the matrix, a few situations in which the matrix should be removed will be mentioned. Removal in these instances is recommended, not because of any destructive ability of the matrix per se but because of the possibility of continued expansion due to certain anatomic and inflammatory factors.

A. Anatomic Factors

1. A pneumatized mastoid. Most cases of chronically discharging ears with cholesteatoma are in sclerotic mastoids, but occasionally the mastoid

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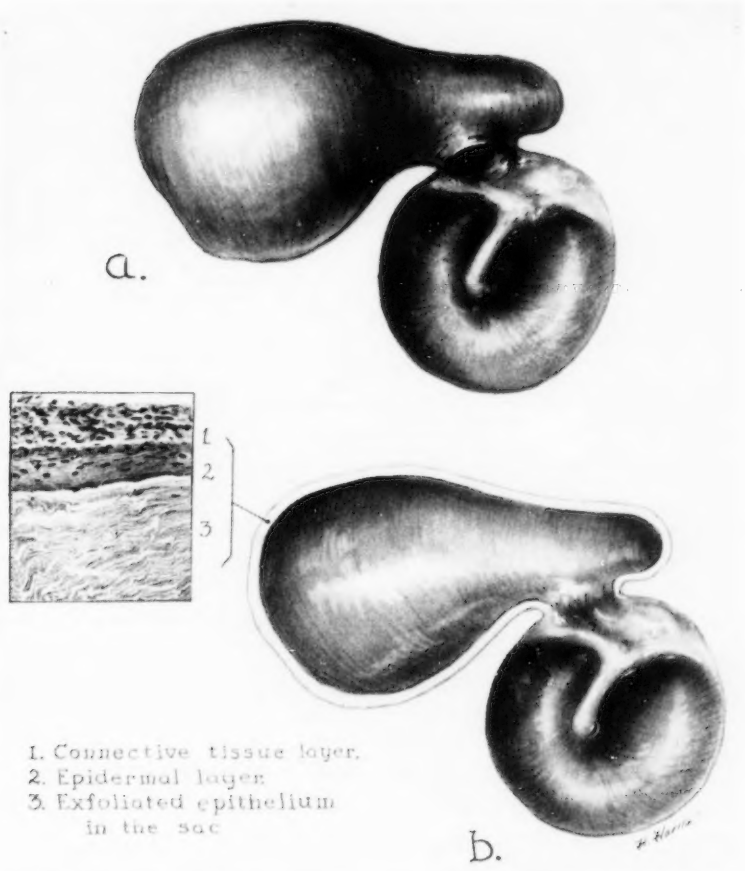


FIG. 1—a. Schematic drawing of a cholesteatomatous cyst extending from a posterior attic perforation in the right tympanic membrane; b. the outer portion of the "sac" is cut away and the cholesteatoma is externalized by leaving the inner portion of the matrix in situ. (Microphotograph courtesy of Lindsay, John R.: Cholesteatoma associated with an isolated perforation in Shrapnell's membrane, Arch. Otolaryng., 20:47-56 [July] 1934.)

will be partially pneumatic. Preoperative determination of this by x-ray is important since extensions of the cholesteatoma into pneumatic spaces can occur and will continue to expand if a thorough exenteration is not done. The matrix must be removed to expose the underlying cells.

2. Perilabyrinthine evaginations of the matrix should be searched for under magnification and should be removed. Such areas, however, can be dealt with without removing the entire matrix.

3. In revision mastoid operations, when one has not had a hand in the primary surgery, it may become necessary to remove the matrix to expose important landmarks and to determine the completeness or incompleteness of the previous surgery.

4. The matrix should be removed whenever there are retrofacial or petrous tip extensions.

5. If visible evaginations in any area are excessive, the entire matrix in that area should be removed.

B. Inflammatory Factors

1. Occasionally suppuration occurs between matrix and bone. This will manifest itself by the formation of granulation tissue between the matrix and the bone and by a pinkish color of the matrix. This elevated matrix should be removed and the bone searched for areas of necrosis.

2. There are cases in which islands of matrix are interspersed with islands of granulation tissue. This indicates bone infection and requires removal of the matrix for complete exposure to search for and clean out areas of bone necrosis.

3. The matrix should be removed when there is clinical or anatomic evidence of a suppurative labyrinthitis, petrositis, meningitis, subdural abscess, epidural abscess or lateral sinus thrombosis.

WHY AND WHEN THE MATRIX SHOULD BE PRESERVED

The premise for advocating the preservation of the matrix is based upon the clinical experience that when the pressure factor and moisture are eradicated, destruction by the cholesteatoma ceases. Occasionally a case is cited[31] in which erosion continues even though the pressure factor appears to be gone. It seems unlikely, in my opinion, that this continued destruction is caused by some unusual, innate, biological activity of the matrix per se. It is more probable that persistent moisture or persistent inflammatory disease within the bone itself is the factor responsible.

Saving the matrix is recommended for the following reasons:

1. The inner layer of the matrix is squamous epithelium and serves to obtain a completely epidermatized mastoid cavity and a dry ear.

2. In sclerotic mastoids there will be less chance for the formation of recurrent cholesteatomatous cysts.

3. In general, more conservative mastoid surgery will be done with an aim towards better conservation of hearing.[3] In the attic type of cholesteatoma, maintenance or even improvement of hearing is almost certain since preserving the matrix leaves the middle ear structures undisturbed.

4. In the presence of certain labyrinthine fistulas, the matrix will act as a barrier against infection entering the labyrinth.

5. In exposed dura mater in any area including lateral sinus, where there is no clinical evidence of infection, the matrix may be firmly adherent. Leaving the matrix will prevent surgical trauma to the dura. (The presence of disease in these areas usually will be evidenced by granulations or a pinkish color of the matrix. In these situations, the matrix may be removed readily.)

6. In facial nerve paralysis caused from the pressure effects of a cholesteatoma in which the function may return when the pressure is released, an attempt to remove an adherent matrix from the nerve may produce some injury to the nerve. However, when there is bone necrosis about the nerve, as evidenced by granulation tissue interspersed with matrix, the matrix should be removed.

7. In cases where the medial wall of the middle ear and stapes are covered over by a firm matrix, dislocation of the stapes will be avoided.

8. In instances where the eustachian tube orifice is sealed off by a firm matrix, this objective in radical surgery has already been accomplished.

COMMENT

Reasons for saving the matrix as given above in 1, 2, and 3, will be discussed further since they are especially important.

1. The ultimate goal in the healing of a modified radical or radical mastoid cavity is complete epidermatization of the new cavity. Cholesteatoma is Nature's attempt at accomplishing this, sometimes successfully by herself, at others, with help from the surgeon. The inner layer of the matrix is stratified squamous epithelium and serves as a source of epithelium for the new lining. This epithelium, which has a flaky, unhealthy appearance at the time of surgery, takes on the appearance of normal skin when the constant irritative effect of the superimposed collection of dead cells and moisture has been removed. It has been said that the matrix is more scaly and persists in its eczematoid reaction. Those of us who constantly utilize the matrix cannot agree with this. Shambaugh[22] states: "I fail to see any difference between stratified squamous epithelium that lines a cholesteatoma and that lining a healed radical cavity."

Dr. Walsh[30,31] thinks that the matrix differs in some way from the skin which one puts in to line the mastoid cavity when one does a graft. He feels that the matrix has some unusual innate, destructive activity that is not present in skin. He demonstrated that an extract of matrix and desquamated epithelial debris of a cholesteatoma ground in a mortar with saline, when incubated with auditory ossicles immersed in the extract, produced minor histologic changes which were not in evidence in the controls. The controls consisted of the incubation of ossicles immersed in normal saline. One wonders if the control ossicles might not have exhibited the same histologic changes had they been incubated with an extract of inflamed skin taken from elsewhere in the body rather than with saline.

Dorothy Wolff,[32] who has had an extensive experience in temporal bone pathology, states: "Cholesteatomas derived from marginal drum membrane perforations exhibited in their epidermal layers no innate biological activity."

A reason given for the belief that the matrix has some unusual destructive power is the appearance of continued growth in an occasional case after the pressure factor appears to have been relieved. Could not skin exposed to the same environment appear to exhibit these same properties?

Lindsay[15] stated: "If you invaginate normal skin into an area where it is kept moist, the reaction of that skin apparently changes." He produced a cholesteatoma in the fenestrated labyrinth of a monkey by pushing the skin of the tympanomeatal flap into the fenestra.

Is it not possible that the continued growth attributed to the matrix or other forms of squamous epithelium is due primarily, in some cases, to disease of the underlying bone? Neumann,[19] Fabry,[7] Druss[6] and Zeroni[33] have pointed out that even though the epidermis of a radical cavity appears dry and healed, it is quite possible that there is activity going on continually beneath the epidermis. Druss[6] cited two cases in which the epidermis had grown over and practically lined the inner tympanic wall (fig. 2) while beneath it there was evidence of active inflammatory changes, that is, marked cellular infiltration in the subepidermal tissue, the presence of infected cysts and partial destruction of the facial nerve canal by osteoclasts, exposing the facial nerve. These cases had had previous radical surgery and the epithelium covering the tympanic wall was that which was allowed to grow in from adjacent epidermis.

If the matrix, per se, has an individual enzyme or an unusual power of con-

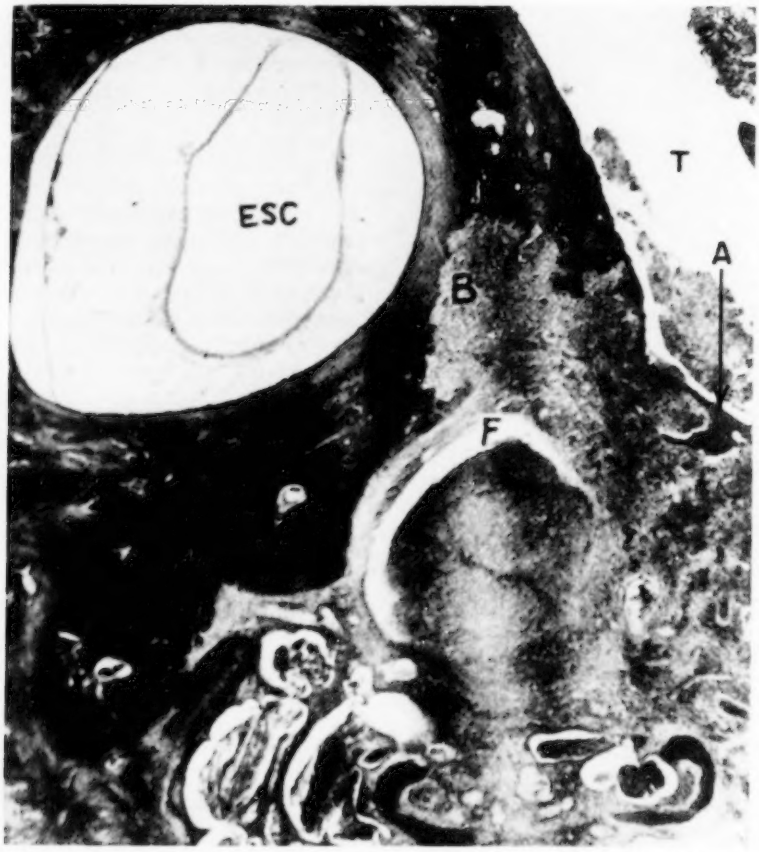


FIG. 2.—Photomicrograph showing the growth of squamous epithelium on the inner tympanic wall, while beneath it the destructive process of the bony labyrinth is going on. A good part of the facial canal has been destroyed. A, indicates squamous epithelium; B, necrosis of the bony labyrinth; ESC, external semicircular canal; F, facial nerve; T, tympanum. (From Druss[8])

tinued growths, why is this continued growth so rare in those cases in which it is undisturbed? Day,[4] in 50 successive cases of attic cholesteatoma, did *no* surgery in 37 of these. His successful conservative treatment consisted of local cleansing and dehydration. Nine of these cases were under observation from six to eight years, while 21 were followed from nine months to four and a half years. In none of these was there recorded any evidence of continued growth, nor has there been any in our own surgical follow-ups in which the matrix was preserved.

2. In sclerotic, acellular mastoids, secondary cholesteatomatous cysts are more likely to occur in the mastoid cavities when complete removal of the matrix is attempted than when the matrix is preserved. (This does not hold for pneumatic mastoids which have already been discussed under indications for removing the matrix.)

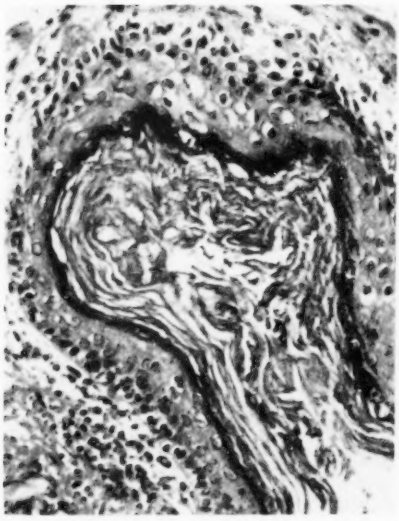


FIG. 3—Section of an evagination in a cholesteatomatous matrix. (Hematoxylin and eosin stain; x285.) (From Begley, J. W., Jr., and Williams, H. L.: Cholesteatomatous cysts secondary to incomplete removal of the cholesteatomatous matrix. Arch. Otolaryng., 53:147-152 [Feb.] 1951.)

Have not most of us seen an occasional case in which a recurrent cholesteatomatous cyst has developed in the mastoid cavity even though we used magnification and the utmost care in removing what we thought to be the entire matrix at the time of the primary surgery?

These recurrent cysts apparently arise from microscopic epithelial extensions in the sclerotic bone, such as shown in figure 3, which is magnified 285 times. These are too small to be seen even with magnification and are unwittingly left behind. They become covered over with skin grafts or with epithelium derived from adjacent skin and eventually develop new expanding cysts under this skin.

Such recurrences are extremely rare when the matrix is preserved.

It may seem paradoxical to say that epithelial extensions are potential sources of new cysts when the matrix is removed but seldom demonstrate such activity when the matrix is saved. When the matrix is removed, the squamous epithelium of the remaining microscopic extensions becomes buried under squamous epithelium, a most undesirable situation. When the matrix is saved, *the microscopic extensions are part of the overlying epithelium* and apparently do not progress when the matrix is externalized and the moisture, with which irritation and infection are usually associated, is eliminated. An explanation for this may be in the histologic observations of Ojala and Saxen,[20] which suggested that infection produces small areas of necrosis with aggregations of inflammatory cells resulting in clefts and openings in the connective tissue beneath the epithelium. Proliferating epithelium then spreads through these clefts and cholesteatoma extension occurs. When the inflammatory reaction ceases, these tissues heal and the resulting scar tissue prevents further epithelial extension or penetration.

Recently, Peterson[21] reported the development of recurrent cholesteatomas in the cavities of 11 cases out of 42 radical mastoidectomies in which primary skin grafting had been done. In each instance, complete removal of the cholesteatoma matrix had been attempted at the primary operation. Peterson interpreted this secondary cholesteatoma formation as originating from the skin grafts which had been overgrown by granulation tissue. A more probable explanation is that the secondary cholesteatomas developed from microscopic matrix remnants trapped under the skin grafts.

In two of my own cases, not skin grafted, in which radical mastoidectomies were done and complete removal of the matrix carefully attempted under magnification, recurrent cholesteatoma-

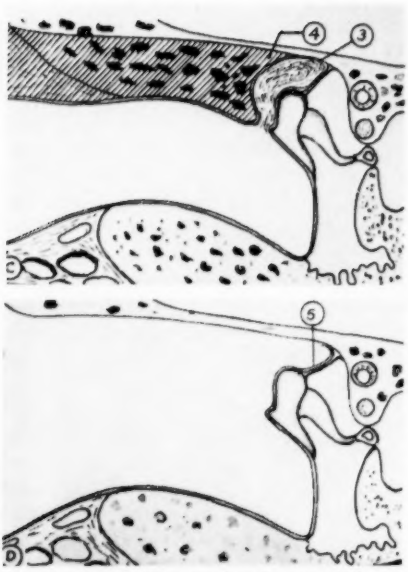


FIG. 4A—The cholesteatoma has filled the entire attic (3). The medial portion of the matrix has sealed off the middle ear. The shaded area (4) is the lateral attico-antral bone which is removed in the modified radical mastoidectomy. (Drawing, courtesy A. L. Juers, M.D.) B—The cholesteatoma and lateral attico-antral bone have been removed. The medial matrix (5) has been left in situ. The middle ear structures have not been disturbed. (Drawing, courtesy of A. L. Juers, M.D.)

tous cysts developed, one in the mastoid bowl 15 months after the initial surgery and the other in the attico-antral area 13 months after operation. I have never seen this occur in any of the cases in which I preserved the matrix.

3. Most cholesteatomas are from attic or marginal perforations and often will seal off the middle ear at the approximate level of the anterior and posterior malleolar folds (fig. 4A). In such an instance, it does not seem reasonable to break down a natural line of defense and tear apart the very structure, the matrix, that does the sealing. This type of case is ideal for the modified radical mastoidectomy and *is the most important indication for preservation of the matrix*. If the matrix is not disturbed, the middle ear structures will not be disturbed (fig. 4B) and the preoperative hearing level will be maintained or improved.

In an occasional case the matrix will have invaded the epitympanum medial to the head of the malleus and incus. In such a circumstance removal of the incus and head of the malleus is required.

In recent years, Day,[5] Lathrop,[13,14] Maxwell[17] and Juers[10] have demonstrated that good hearing can be obtained in the modified radical mastoidectomy after removal of the incus and head of the malleus. Maintenance of hearing in these cases must be dependent upon the maintenance of a patent tympanic air space, for, in one of Juers' cases, when the tympanic membrane became adherent to the promontory, the postoperative hearing, which at first had been good, dropped from a 16 to a 53 decibel level.

Some patients have severe tympanic membrane retraction preoperatively yet have hearing at, or better than, serviceable threshold. The wisdom of disturbing the middle ear in such cases seems open to question when one can be reasonably sure that the preoperative hearing level will be maintained if the matrix and the middle ear are disturbed. Illustrative of this is the case shown in figure 5 in which the preoperative hearing level of 23 decibels was improved to 18 decibels.

If one chooses the technic advocated by Lathrop who, after removing the incus and head of the malleus, covers the epitympanum with a Lempert[16] fenestration-type of flap in the center of which there still exists the primary perforation, there remains a fifty per cent chance that this perforation will not close and a twenty-five per cent incidence of constant or intermittent drainage.[14] It is conceivable that a new cholesteatoma may develop from the persistent perforation.* This is not possible in

*Lathrop, in a recent personal communication, stated that he has never seen this happen but Kenneth Day, in a personal communication, stated he has seen this sequela in two cases.

FIG. 5—Severe retraction of posterior portion of left tympanic membrane. This was present before and after surgery, which was a modified radical mastoidectomy with preservation of the matrix. The preoperative hearing level of 23 decibels improved to 18 decibels.

the technic we use since the perforation is completely eliminated when the membranous external auditory canal is cut through its long axis at right angles to and through the superior margin of the perforation.

The endaural technic of Lempert is employed with a modified S-shaped incision.[3] The membranous canal wall is separated from the bony canal and the mastoid is exenterated with electric burs. The outer wall of the cholesteatoma is removed as exenteration progresses. The inner matrix is preserved. The bony canal wall, including the bridge, is removed. (Removal of the bridge and any overhanging bone is important.) The membranous canal, which is not needed for a tympanic flap to seal off the middle ear since the matrix serves the purpose, is reflected into the mastoid bowl by cutting the canal at about "twelve o'clock" to and through the perforation, thus eliminating the perforation (figs. 6 and 7). The position of this membranous canal incision may vary with the location of the perforation. It is important to avoid covering the matrix with the skin flap since any buried epithelium will form a new cholesteatoma.

The effectiveness of hearing conservation in this technic is borne out by the statistics (table I). In 64 consecutive cases treated surgically for chronic otorrhea, the complete radical mastoidectomy was done on 17 and the modified radical on 47. Of the 47 modified radicals, 31 had cholesteatomas. In 30 of these 31 cases, the matrix was preserved. Follow-up audiograms were done on 26 of these and in only 2 did the postoperative hearing level drop five or more decibels. Neither of these 2 cases had serviceable hearing preoperatively. Twelve cases continued at or were improved to the serviceable hearing level, 8 were improved but did not reach the 30 decibel level, and 4 remained unchanged.

Adequate postoperative audiograms were obtained in only 8 of the 16 noncholesteatoma modified radicals. Three showed a hearing improvement, 3 were unchanged, 1 showed a slight loss, and 1, a marked loss.

This technic is also an effective one in obtaining a dry ear. Of the 31 cholesteatoma cases mentioned above, 28 became dry, one remained wet, one did not appear for follow-up, and one died of a brain abscess present at the time of surgery (table II). The over-all results in these 31 cholesteatoma cases (in which the matrix was saved in 30) were better than in the 16 without cholesteatoma in which the ears of 12 became dry and 4 remained wet. (The 16 cases without cholesteatomas, preoperatively, had both marginal and nonmarginal tympanic membrane perforations, good hearing and continued suppuration not improved with conservative therapy.)

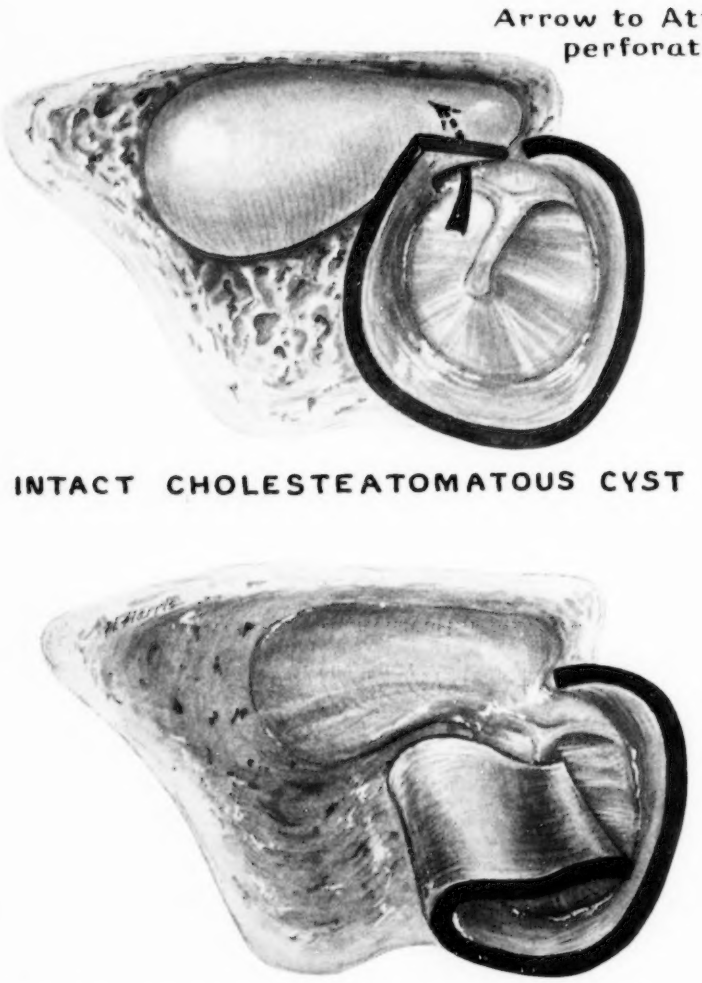
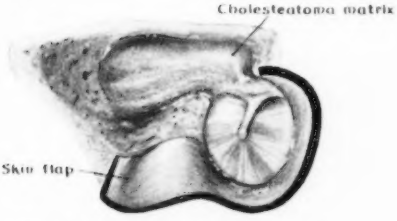


FIG. 6—(Top) Schematic drawing to show how the membranous canal is cut to and through the attic perforation. The arrow is through the perforation into the interior of the cholesteatoma which, for the purpose of illustration, is shown as an intact cyst.

(Bottom) The outer half of the cyst has been cut away and the inner wall (the matrix) has been left in situ. Since the membranous canal has been cut through the perforation, there is no longer an attic perforation.



COMPLETED MODIFIED RADICAL MASTOIDECTOMY

FIG. 7.—The posterior half of the membranous canal serves as a skin flap to line the mastoid bowl. It should not cover any portion of the matrix. The epithelium from the matrix and skin flap extends readily to the uncovered bone and complete healing is usually rapid.

Also significant in the figures just related is the ratio of 47 modified radical to 17 radical mastoidectomies. If one takes at random the figures of any published similar series (table III), there invariably will be a reversal of this ratio, that is, a preponderance of radical mastoidectomies over modified radicals. This may, in part, be due to differences in types of cases, but a more likely explanation is the over-all tendency to treat cholesteatomas radically. Illustrative of this are the statistics of mastoidectomies done on clinic patients at the Stanford University Medical School where, in about 1943, the practice of removing the matrix was supplanted by that of saving the matrix. Between 1933 and 1943, the ratio of modified radical to radical mastoidectomies was 1 to 10, but changed to 1 modified to 1.2 radicals between 1947 and 1952. These figures and those of Shambaugh and Derlacki, as well as my own, indicate that more conservative surgery is possible when the matrix is saved. It is my feeling that if one could dispel the concept that the matrix per se is a dangerous structure, more conservative surgery would be done and a greater conservation of hearing would result.

Is this conservation of hearing done at the expense of the patient's safety? In answer to this I may state that in almost 20 years' experience in preserving the matrix I have never seen any of these cases develop a serious complication. The one patient in my current series that died of a brain abscess had the abscess at the time of her primary operation.

To clear up one further question—if one does not lift off the matrix in the attic area, how does one know the status of the underlying ossicles? One does not, except that if there is suppuration taking place in the ossicles or middle ear, granulations form under the matrix, which will become pink and elevated. In these cases, of course, as previously stated, the matrix should be removed. In others where the matrix is well bound down, it is possible that the underlying ossicles may be altered from pressure or other effects of the cholesteatoma, but does this matter if the hearing is good and there is no evidence of middle ear infection? Clinical experience indicates that it does not.

Further clinical evidence that the matrix is a useful and safe structure is given by Shambaugh and Derlacki,[24] who were kind enough to furnish me a list of 62 of their cases operated upon between 1938 and 1952. All of these cases have been followed within the last eight months (January to September 1952). Of the 62 cases, 36, all with cholesteatoma, had modified radical mastoidectomies and 26 had radical operations, a ratio of 1.7 to 1.

There were 57 cholesteatomas in the 62 patients and the matrix was saved in every case, including 6 with labyrinthine fistulas. In some cases, where there were evaginations or underlying granulation tissue, these portions of the matrix were removed but the "main body" of the matrix was preserved. In none was there any evidence of recurrent cholesteatomatous cyst formation or continued bone erosion. Reoperation was required

TABLE I

HEARING RESULTS IN 47 MODIFIED RADICAL MASTOIDECTOMIES AND 17 RADICAL MASTOIDECTOMIES

RESULTS AS INDICATED BY AUDIOGRAM	MODIFIED RADICAL MASTOIDECTOMY		RADICAL MASTOIDECTOMY	
	With cholesteatoma	Without cholesteatoma	With cholesteatoma	Without cholesteatoma
Serviceable level	12	0	0	0
Improved	8	3	1	1
Unchanged	4	3	1	2
Worse	2	2	1	4
No audiogram	5	8	0	7
Totals	31	16	3	14

TABLE II

OVER-ALL RESULTS OBTAINED IN 47 MODIFIED RADICAL MASTOIDECTOMIES AND 17 RADICAL MASTOIDECTOMIES

RESULT	MODIFIED RADICAL MASTOIDECTOMY		RADICAL MASTOIDECTOMY	
	With cholesteatoma	Without cholesteatoma	With cholesteatoma	Without cholesteatoma
Dry	28	12	3	11
Wet	1	4	0	3
Death (brain abscess)	1	0	0	0
Not followed	1	0	0	0
Totals	31	16	3	14

TABLE III

COMPARISON WITH RESULTS OF OTHER PUBLISHED SERIES

AUTHOR	NUMBER OF CASES	MODIFIED RADICAL MASTOIDECTOMIES	RADICAL MASTOIDECTOMIES
Sheridan[25]	55	10	45
Kettel[12]	37	2	35
Shambaugh and Derlacki[24], Cholesteatoma matrix preserved when possible	62	36	26
Baron, Cholesteatoma matrix preserved when possible	64	47	17

in only one patient because of persistent suppuration.

In conclusion, I wish to state that there is overwhelming clinical evidence that, in certain situations, it is to the patient's advantage for the surgeon to preserve the cholesteatoma matrix. This is especially true in the attico-antral type of cholesteatoma with a sealed-off middle ear, where the end results, both as to hearing and dryness, are superior, provided that meticulous surgery and just as meticulous aftercare are furnished the patient.

What about the occasional case with a bad result and an annoying sequela? It must be remembered that in *any* type of temporal bone surgery there will be an occasional poor result and a bizarre sequela. One must not lose sight of the fact that for every bad result there are scores of good ones. This certainly holds true in those cases where the matrix has been saved, for one cannot ignore the innumerable good results over a period of many years in the hands of Shambaugh,[23,24] Juers,[10,11] McNaught,[18] Shannon,[26] and others,[1,2,8,27-29] as well as my own. These results attest to the fact that the matrix per se is not a dangerous structure and, in certain situations, can and should be converted to a useful purpose.

SUMMARY

1. The matrix of a cholesteatoma, in certain situations, is a useful, harmless structure.

2. Indications for removing the matrix have been given.

3. Indications for saving the matrix have been presented.

4. In an attico-antral type of cholesteatoma, the technic of doing a modified radical mastoidectomy has been described.

5. Clinical experiences of the author and others have been presented to support the contention that, in certain situations, the matrix can and should be converted to a useful purpose.

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Symposium: The Surgical Management of Aural Cholesteatoma

THE PATHOGENESIS OF CHOLESTEATOMA AND SUMMARY OF DISCUSSIONS ON THE REMOVAL OF THE MATRIX

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THE THREE theories which have been considered to explain the occurrence of cholesteatoma in the ear have been: (1) congenital or primary cholesteatoma such as originally described by Johannes Muller, (2) the metaplasia theory, and (3) the extension of epidermis from the skin of the canal or drum membrane.

A congenital origin apparently can be ruled out except for exceptionally rare cases. For example, the review of several thousand cases of cholesteatoma in Munich, Basel, and Zurich (Nager, 1925) failed to reveal a single case which could fulfill the requirements to prove a congenital origin. The metaplasia theory is still mentioned from time to time but lacks the support of convincing histopathologic evidence.

The mass of evidence, both clinical and histopathologic, indicates an origin from the epidermis of the canal or drum membrane.

The type of cholesteatoma found in the ear is divided into two groups:

1. The extension of epidermis through the marginal or total perforation in the membrana propria in cases of necrotizing otitis.

2. Attic cholesteatoma, developing in the region of Shrapnell's membrane or the upper periphery of the membrana propria posterior to the malleus.

The incidence of group 1 has decreased greatly since the widespread use of antibiotics and the resulting decrease of necrotizing otitis. The incidence of group 2 has shown no definite decrease. The explanation for this lies in the etiology and pathogenesis of the attic cholesteatoma. There is general agreement among those who have made extensive histopathologic studies that the underlying factor in all cases is tubal obstruction as a result of inflammatory disease, usually in childhood.

The course of cholesteatoma development has been interpreted in three ways.

1. Tubal obstruction has led to negative pressure and a sinking in of Shrapnell's membrane, with formation of a pocket which in some cases might rupture producing a perforation through which the epidermis might extend (Bezold, Haberman theory, see Nager 1925). According to this explanation, an air-containing epitympanum and Prussak's space are assumed. This explanation is no longer considered satisfactory.

2. Tubal obstruction in early life. Inflammatory connective tissue fills Prussak's space, the epitympanum and

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the preformed spaces in the bone of the mastoid. A persistence of embryonal connective tissue and otitis media neonatorum have each been considered, but more probably the connective tissue in the attic develops as a result of repeated acute inflammations.

3. The irritation caused by these inflammatory episodes stimulates the deeper layers of the epidermis to activity and rapid growth. Since the dense fibrous middle layer of the tympanic membrane is absent in Shrapnell's membrane, the epidermis is free to extend medially into the connective tissue in long finger-like projections. With the irritation of the epidermis there is increased exfoliation, exudation, swelling and retention of exfoliated products in the depressed pocket or pit. If this is not removed promptly it forms the nucleus of a cholesteatomatous mass in the attic. An accumulation of serous exudate in the middle ear is a common accompaniment.

This explanation probably applies to most cases of attic cholesteatoma. It applies as well to those cases in which the perforation develops at the upper periphery of the pars tensa. In many cases the two perforations develop at about the same time as a part of the same process, the perforation at the upper periphery of the pars tensa being preceded by a retracted scar, the result of inflammatory adhesions. The presence of connective tissue sealing off the attic explains the failure of air to pass through the attic perforation on inflation of the middle ear.

It is occasionally possible to observe the development of attic cholesteatoma clinically. In two such cases in recent years the process was followed from the stage which was characterized by recurrent attacks of otitis media with effusion and retraction of Shrapnell's membrane to the stage at which the cholesteatoma had extended widely into the attic. The clinical course in these cases corresponded to the type of development described in group 2 above.

This course of development indicates that an important factor in the pathogenesis of cholesteatoma is the irritating effect of the inflammatory reaction on the epidermis with swelling, exudation and retention of desquamated products having a secondary effect in the formation of the cholesteatomatous mass.

SUMMARY OF DISCUSSIONS ON SURGICAL TREATMENT OF THE CHOLESTEATOMATOUS MATRIX

Dr. Walsh's presentation may be divided into three parts.

First, he has made histopathologic studies on the ossicles removed from cases of cholesteatoma. These have demonstrated an extension of the subepithelial layer of the matrix along blood spaces into the bone with both removal of bone by osteoclasts and in some areas rebuilding of bone by osteoblasts. Certain components of the bone appeared to be more susceptible to the destructive process, particularly the calcified cartilage remnants.

Second, his experiments have shown that cholesterin is apparently not a factor in the destructive process. The experiments in which ossicles were incubated in a filtrate prepared from the cholesteatoma matrix appeared to show some evidence of osteolysis of certain parts of the bone, particularly calcified cartilage. Both the histologic observations and the experiments contribute evidence as to process by which bone is absorbed by the cholesteatoma matrix. It has been pointed out by Dr. Baron that the experiments do *not* make any comparison between the behavior of the cholesteatoma matrix and the lining of a cavity which has been derived from a

skin flap or graft, when subjected to similar conditions of moisture and infection.

Third, on a clinical basis Dr. Walsh has found no evidence that the extension of the matrix depends upon pressure necrosis. He has observed cases in which, following a radical mastoidectomy, a fistula has developed in later years into the labyrinth beneath the matrix. These cases have all had infection in the cavities.

Dr. Walsh has not observed bone absorption to have occurred when the cavity was healed by skin derived from a flap or graft.

Dr. Walsh suspects that even in the dry smooth cavity with an epithelial lining derived from cholesteatoma matrix, absorption of bone may be taking place beneath the lining.

Dr. Baron has pointed out certain conditions in which removal of the cholesteatomatous matrix may be advisable. These may be summarized as follows:

1. In certain cases the eradication of infection requires the removal of the matrix. He contends that with the use of magnification the necessity for removal can be determined at operation.

2. To eliminate evaginations into pockets in the bone and to exenterate underlying cells.

The reasons given for preserving the cholesteatomatous matrix when not contraindicated for the above reasons are (1) to aid in epithelialization of the cavity, and (2) to conserve hearing.

Dr. Baron points out that the majority of cholesteatomas now seen are those with an attic perforation. Most of these have a middle ear sealed off from the cholesteatoma cavity. Such middle ears should be allowed to remain sealed off. Many such ears have good function. The modified radical operation does not disturb the hearing. If cholesteatoma extends medial to the heads of the ossicles and these project, they may be amputated without further damage to hearing or opening the middle ear.

Dr. Baron also contends that fistulas in the horizontal canal should not be uncovered if uninfected. He calls attention to the fact that cyst formation may occur whether or not the matrix has been removed.

Dr. Baron points out that Dr. Walsh's experiment in which ossicles were incubated in material from cholesteatomatous debris fails to provide any comparison between the matrix of cholesteatoma and the epithelial lining derived from a skin graft or flap. The controls were immersed only in normal saline. A proper control would have been to immerse similar ossicles in material obtained from skin which had been subjected to moisture and infection. He contends that clinical experience leaves no doubt that in the absence of infection, moisture and retention the cholesteatomatous matrix shows no inclination to spread or to cause absorption of underlying bone.

A well-recognized clinical fact which has a bearing on this discussion may be mentioned. Any radical mastoid cavity, whether it has been formed for the purposes of fenestration or for the cure of cholesteatoma or whether it has been done by the cholesteatoma itself, is likely to require periodic care to prevent retention of epithelial debris which ultimately becomes infected.

To further clarify the implications of this discussion one definitive question might be asked:

1. In the absence of infection, moisture and retention of debris and crust *is there any evidence* that the epithelial lin-

ing derived from the cholesteatomatous matrix causes absorption of underlying bone?

Dr. Baron has presented evidence that the answer is "no." My own experience agrees with that of Dr. Baron.

If the answer to this question is in the negative, the question of whether to remove the matrix *in a particular case* would resolve itself into these major considerations:

1. Is it necessary to remove the matrix in that case to obtain eradication of the infection and prevent retention of desquamated epithelium and debris?

2. The possibility of the middle ear remaining wet may be increased if a middle ear which has already been sealed off is opened to the exterior by the operation.

3. Will the preservation of the maximum degree of hearing be aided by *removing* or by *preserving* a part of the matrix?

THE SURGICAL TREATMENT OF PAROTID GLAND TUMORS

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THE seemingly erratic clinical behavior of tumors of the parotid gland, the apparent wide variations in the results of our surgical efforts to eradicate these neoplasms completely and permanently, and the pessimistic attitudes of some surgeons regarding their ultimate prognosis with any form of therapy, prompted two of us[2] in 1949 to prepare a detailed analytical study of 227 patients with primary parotid gland tumors.

The determination of the survival rate without recurrence of tumor was the chief objective of this earlier survey. Consideration was given also to the incidence of malignant change in benign tumors and the possible factors contributing thereto. Emphasis was placed upon preservation of the facial nerve when functionally intact and grossly uninvolved by neoplasm at the time of operation.

In reviewing follow-up studies of these patients during the past three years, it has become distressingly apparent that there were many instances in which the clinical course seemed incompatible with the histopathologic diagnosis. The over-all survival rate of patients who had malignant tumors excised was uncommonly high. The stated results seemed to be justified, however, since they were based upon the then accepted positive histopathologic findings.

In an attempt to account for possible errors in the previous report, a complete reclassification and re-evaluation of the clinical and pathologic data were mandatory. The satisfactory accomplishment of this objective required the review of all of the pathologic material from these patients and the patients operated upon subsequently.

There has been much disagreement among pathologists regarding the classification of parotid tumors. Some of them admit readily that there may be a tendency to "overdiagnose" some of the cellular tumors presenting medullary patterns. Some of these are separated with difficulty into benign and malignant groups. This is exemplified by the fact that 67 tumors diagnosed as carcinomas and included as such in our previous report have been reclassified as benign tumors in this study. The "overdiagnosis" of cellular benign tumors by pathologists can be confusing to the surgeon and detrimental to the patient. The surgeon may develop an exaggerated sense of security in the surgical management of malignant tumors by "curing" a large

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percentage of patients by means of surgical procedures much less radical than would be demanded by a truly malignant growth.

This report concerns 280 parotid tumors reclassified and re-evaluated according to the stated objective. These parotid tumors have been diagnosed and treated by members of the staff of the Departments of Otolaryngology, General Surgery, and Pathology of the University of Michigan Hospital and St. Joseph's Mercy Hospital in Ann Arbor, Michigan.

There have been 58 patients added since our original report. Five patients from the previous report are not included because the histologic material is unavailable at this time.

Any detailed histologic classification of salivary gland tumors must recognize the multiple and varied epithelial components of the gland as well as its supporting tissue structures. Such a classification, including all cellular components, might facilitate the segregation of such tumors into various groups, each presenting a predictable clinical behavior pattern. Thus, the surgeon might be better prepared to undertake therapy and render a more accurate prognosis on the basis of the histopathologic report.

HISTOPATHOLOGIC CONSIDERATIONS

The interest of pathologists in parotid gland tumors is traceable to the observations of Virchow,[8] the father of pathology, in 1863, although Billroth,[1] the surgeon, published his classical description of cylindroma in 1859. For the past century, and undoubtedly for a much longer period of time, the controversy over classification of the neoplasms of salivary glands has been a favorite subject of pathologists. Likewise, surgical treatment has been influenced by the somewhat uncertain criteria available to pathologists for the diagnosis of malignant change in salivary gland tumors.

Benign Tumors

The mixed tumors were grouped with the benign neoplasms and properly so, but a word of caution must be interjected at this point, for there has been histopathologic evidence of a carcinoma arising in a mixed tumor in several instances. While the incidence of malignant change in mixed tumors is low, the potential danger of dedifferentiation exists.

Variations in types and amounts of either stromal or epithelial elements, or both, in parotid tumors are myriad.

McFarland[5] classified mixed tumors with an abundance of epithelial cells as canalicular forms, while those with dense hyaline stroma surrounding nests or cords of cells he designated as cylindromas. The admixture of these two cell types varies from scirrhous, sarcoma-like patterns to the classical cylindromatous forms. While the cylindromatous pattern normally occurs in the benign mixed tumor, it is seen to best advantage in a slightly modified form as a malignant neoplasm, the pseudoadenomatous basal cell carcinoma to be described in detail later.

The mucoepidermoid tumors, so nicely removed from the conglomerate group of mixed tumors by Stewart, Foote, and Becker,[7] pose problems of diagnosis as well as treatment. The ductal epithelium of the normal parotid gland produces mucin and in increasing amounts when the ducts are obliterated or other inflammatory change occurs. Likewise, cuboidal or columnar gland cell epithelium tends to undergo squamous metaplasia in the presence particularly of chronic inflammatory processes. The clinical behavior of these neoplasms may be correlated with the inflammatory response which occurs as a result of epithelial mucin extruded

into the tissues. Lack of encapsulation of some of these "neoplasms" may indicate that they may not be true neoplasms but inflammatory nodules.

A unique adenoma was isolated from the group of salivary gland tumors. This neoplasm has been designated a serous cell adenoma. It is believed to be derived from acinar cells. While it apparently has been described before by McFarland[4] and Godwin and Colvin,[3] no specific designation has been found to have been attached to it. The cytoplasm does not stain with mucicarmine for epithelial mucin while Schiff's reagent demonstrates secretory granules, probably zymogen or a glycoprotein precursor of zymogen. Unlike the acidophilic cell adenoma, the cytoplasm of the cells in the serous cell adenoma has an affinity for the basic dye, hematoxylin. Small amounts of mucin are present in dilated spaces in the adenoma and suggest that a few mucous cells may be present.

Malignant Epithelial Neoplasms

Malignant neoplasms of the parotid glands are mainly epithelial in type, although rarely sarcomas may be seen in these locations.

The epithelial neoplasms are carcinomas of the two main cell types, squamous and gland cell. The squamous cell carcinomas probably arise by squamous metaplasia of the ductal epithelium of the glands.

The squamous cell carcinomas are of three main types, i.e., cornified, noncornified, and lymphoepithelioma.

Gland cell carcinomas, usually not sufficiently well differentiated to be designated adenocarcinomas, were the commonest malignant epithelial neoplasms encountered. These included the pseudoadenomatous basal cell carcinoma, the acidophilic gland cell carcinoma, and the serous cell adenocarcinoma.

The pseudoadenomatous basal cell carcinomas take a variety of forms so that cylindroma is not a desirable designation for all examples, since many of the tumors do not contain the cylinders of dense fibrous connective tissue around epithelial cells. The forms of the neoplasm seen include the classical cylindromatous type and the canalicular or medullary types in which epithelial cells predominate. In the cylindromas the epithelial cells were atypical in two of the neoplasms of this group, and death occurred rapidly, unlike the prolonged but ultimately fatal course of the classical cylindroma.

The somewhat indefinite group of mucoepidermoid carcinomas as indicated by Stewart, Foote, and Becker were obviously malignant squamous cell carcinomas with a minimal amount of mucin produced by gland cells.

Two types of gland cell carcinomas were thought to be separable from the general group of carcinomas; i.e., the acidophilic gland cell carcinoma and the serous cell adenocarcinoma. While both neoplasms may be included among other reports of carcinomas of the salivary glands, the descriptions are not readily interpretable as such.

The acidophilic gland cell carcinoma is composed of large cells with abundant cytoplasm which stain deeply with eosin, like the cells of the acidophilic or oxyphilic cell adenomas. The cells of the carcinoma provoke a scirrhous or desmoplastic reaction in the stroma in some instances while a few examples display well-formed glands.

The other group of carcinomas which was thought to be an entity was the serous cell adenocarcinoma. Like the cells of the serous cell adenoma, the cytoplasm of the serous cell adenocarcinoma stains with hematoxylin. In the adenomas the cells occur in medullary groups only, and in the carcinomas these cells also occur as well-formed glands.

The unclassified group of carcinomas included eight patients. Small inade-

quate biopsies from patients with advanced disease accounted for some of the examples, although in others the criteria utilized for classification of other neoplasms were not present.

Mesenchymal neoplasms of the parotid glands are uncommon, and many reports do not contain examples of such tumors. Only lymphoblastomas, including lymphosarcoma and reticulo-endothelial cell sarcoma, were found in this series, although the other forms of mesodermal tumors must occur on rare occasions.

It is not possible to determine what Mikulicz[6] reported in 1888, but it would appear that the patient had lymphoblastoma, including involvement of parotid glands. In the classification utilized, Mikulicz' syndrome is synonymous with lymphoblastoma, while Mikulicz' disease is indicative of a non-neoplastic bilateral involvement of parotid and other glands.

Reference to non-neoplastic tumors of salivary glands must be reserved for another report.

SURGICAL TREATMENT

The 280 tumors included in this report have been grouped according to this classification. In many instances, this was accomplished easily because the classical features of the group were readily apparent. In others, the degree of differentiation was less well defined making classification difficult to the point that eight tumors had to be regarded as unclassifiable.

Benign Mixed Tumors

There were 183 patients who had benign mixed tumors in this series. Ten of these were under 21 years of age when first seen, and four had had the tumors before the age of 12 years.

Two hundred one operations varying in type from simple excision of the tumor and its capsule to total parotidectomy were performed upon these 183 patients. Forty-eight of these individuals had had operations for the removal of the tumors prior to admission to University Hospital.

Follow-up studies on all of these patients have been completed through the early months of 1952. The duration of the postoperative period was as follows: 63 patients have been followed less than five years, 70 between five and ten years, 40 between ten and fifteen years, 9 between fifteen and twenty years, and 1 more than twenty years. The clinical course and life histories of these patients attest to the benignancy of these neoplasms.

The type of operation performed was determined by such factors as gross appearance of the tumor, its clinical behavior, the histopathologic report on previously excised tissue, and finally, upon expediency.

It would seem from the statistical analysis of the data obtained that no surgical procedure less extensive than a total parotidectomy can ensure completely against recurrence. Total parotidectomy with attempted preservation of all of the facial nerve was performed in eleven instances. In this group of patients there has been no recurrence of tumor to date. In only three of these has there been any permanent facial palsy, and this has been limited to one branch of the nerve. This more radical procedure was prompted in each instance by the question of malignancy based upon gross or histopathologic findings.

After a single operation upon 172 patients at University Hospital, there are eight patients alive with recurrence of neoplasm. Eleven patients have had multiple operations. In one of this latter group, there is evidence of residual tumor which could not be removed from

an elderly debilitated patient who was operated upon under local anesthesia.

The postoperative complication of facial nerve palsy continues to be the most dreaded hazard in any operation upon the parotid gland. The incidence of this complication might be expected to be somewhat higher in institutions having residency training programs. However, our study would indicate that the hazard is not sufficiently great to be a deterrent to adequate surgical procedures in this region.

In the present series, some degree of temporary postoperative palsy was noted in twenty patients. In each one, there was full and complete return of function (in most instances, before the patient left the hospital). In eight other patients, however, there was some degree of permanent palsy produced by trauma to the seventh nerve. In one, the palsy is nearly complete and resulted from transsection and subsequent suturing of the nerve. There were three instances of permanent upper branch palsy and four of permanent loss of function of the mandibular ramus. In four of these patients, preservation of the nerve was difficult due to previous operations upon the gland.

Permanent palsy, the result of deliberate sacrifice of the nerve, was produced in five instances. In one patient, the diagnosis of carcinoma was made at a previous operation which prompted radical resection of the gland and facial nerve. The other four patients had the mandibular branch sacrificed because of adherence of tumor to nerve, or as a result of a frozen section diagnosis of malignant neoplasm.

A rare but serious operative complication can be hemorrhage due to injury to the internal carotid artery or to the internal jugular vein.

The auriculotemporal syndrome, as originally described by Frey,[9] has occurred in 19 patients. This complication is of little importance to the patient but it is most intriguing to students of neurophysiology.

It is readily apparent in this group of patients that the benign neoplasms of the parotid gland pose no serious problems of therapy. Since they might be considered to be potentially malignant in all their varieties, complete surgical excision is indicated when the diagnosis is made. A high incidence of recurrence is to be expected when excision is not complete. Complete excision presupposes removal of the tumor, its capsule, which is probably stroma of the gland outside the growing tumor, and a margin of normal gland tissue where possible. Superficial lobectomy may not be wide excision in the case of a large tumor. In such an instance, the tumor capsule probably lies adjacent to the facial nerve or its branches which precludes wider excision without sacrificing the facial nerve. In benign encapsulated tumors, the nerve should be preserved. This may necessitate piecemeal removal of a large tumor in the pharyngeal prolongation of the gland. The consequences of possible recurrence from implanted tumor cells are less serious than a facial paralysis.

Papillary Lymphoid Cystadenoma

This benign tumor was present in 16 patients of this series. Although this lesion is said to occur almost exclusively in men, two of the patients in this group were women. All of the patients were over 40 years of age. All of these tumors were rather slow growing in that the known duration varied from six months to five years and were of small size with the average being approximately three centimeters in diameter.

Simple excision was performed in all of these patients. Thirteen of these patients are alive without recurrence, while three have died of cardiovascular dis-

case and had no evidence of recurrence of the tumor at the time of death. Postoperative facial paralysis or auriculotemporal syndrome did not occur in any of these patients. These tumors like the benign mixed tumors are readily controlled by adequate local excision.

Serous Cell Adenoma

Seven patients received this final histologic diagnosis. In general, these tumors were slow growing since six had been present from three to eighteen years. One, however, had been noted for four months only prior to the examination. Five of these patients are alive and well, one died without evidence of tumor, and one is alive with questionable recurrence. The only postoperative complication was the auriculotemporal syndrome which occurred in four patients. These tumors also are readily eradicated by adequate local excision.

Serous Cell Adenocarcinoma

This tumor is apparently the malignant variant of the serous cell adenoma.

There were five patients upon whom the diagnosis of this highly malignant lesion was made. In our material, each one of these patients was a woman over 50 years of age. Pain was a prominent symptom in four patients while two of them had preoperative facial palsy. In three instances, the tumor had been growing slowly for a long period (four to nine years) suggesting origin in a benign tumor.

The extent of the local lesion made a definitive and apparently complete excision possible in one patient only. Despite this, no clinical evidence of metastasis to cervical lymph nodes was found preoperatively or postoperatively. The one patient who had a radical and apparently complete excision of the tumor is alive three years after operation but has a recurrence of the neoplasm. The remaining four died with carcinoma. Metastases were disseminated by the blood stream as indicated in three patients by their presence in lungs, abdomen, spine, pelvis, ribs and brain.

All of these patients except one were seen too late in the course of the disease for a definitive surgical operation. In two patients, the resected cervical lymph nodes failed to show any evidence of neoplasm. In one patient, tumor emboli were described in skin vessels. This evidence, together with the apparent hematogenous type of metastasis, suggests that earlier wide local excision is imperative. There is no evidence in our material that the mortality rate could be reduced by resection of the regional lymph nodes and the jugular vein.

Acidophilic Cell Adenoma

Three patients had this type of benign tumor. In each instance, the tumor was a slow growing lesion having been present from seven to nineteen years. All of the patients were over 60 years of age.

Two of the patients are alive without recurrence, six and seventeen years after simple excision of the tumors. One had a wide excision of a recurrent tumor this year, six years after a prior operation.

This again is a benign tumor which may be controlled by adequate local excision.

Acidophilic Gland Cell Carcinoma

This is presumably the malignant variant of the acidophilic cell adenoma. However, in this material no transition phases have been observed to substantiate this assumption.

This tumor occurred in nine patients all of whom were over 50 years of age. Six of the tumors demonstrated rapid growth (one to nine months), while three were of many years standing which suggested origin in a benign tumor.

Facial paralysis was present at the time of the examination in five patients. Four patients complained of pain.

In four patients biopsy only was performed due to advanced age or the stage of the disease with metastasis. Death occurred in this group from one month to three years later.

Wide excision was performed on five patients as follows: Total parotidectomy with preservation of the facial nerve, one patient, alive and well, six years; wide excision including a neck gland dissection, one patient, alive and well, nine months; wide excision including the facial nerve, two patients, death unrelated, three months and six years; wide local excision, one patient, alive with local recurrence and metastasis to cervical lymph nodes.

Metastasis in the cervical lymph nodes was present in four patients. One patient had metastasis to the lungs.

The evidence of local invasion of contiguous structures by this tumor and its extension by way of regional lymph channels suggests that wide local excision to include the facial nerve, together with a radical resection of the cervical lymphatics is the treatment of choice.

Benign Mucoepidermoid "Tumors"

Ten patients in this group had mucoepidermoid "tumors" of a benign type according to the histopathologic criteria established by Stewart, Foote, and Becker.[7] On the original examination of the histologic slides, the cellular components seemed sufficiently anaplastic to warrant the diagnosis of carcinoma in all except one. This one exception was of particular interest since the original diagnosis was a papillary lymphoid cystadenoma. Re-examination of the tissue for this study demonstrated the mucoepidermoid "tumor" apparently arising in the Warthin[10] tumor. This patient died of a bile duct adenocarcinoma eight months after the removal of his parotid tumor.

Although these tumors may be definitely encapsulated, their gross appearance is frequently that of a scirrhous, ill-defined, infiltrating tumor suggesting invasive growth. In these two respects, they are clearly set apart from the commoner well-encapsulated benign tumors. The mucinous material which characterizes their histologic appearance may, when in contact with the supporting stromal element of this tumor, result in a fibroblastic response to give the characteristically unencapsulated appearance described. All of the ten patients were over 30 years of age. Because of evidence of encapsulation, the operation was limited to wide local excision in six patients.

A total parotidectomy with preservation of the facial nerve was performed upon four patients. This operation was done as a primary procedure in part as a result of a diagnosis of carcinoma on previous biopsies (two patients); or because the fibrotic change in the tumor gave the gross pathologic impression of a nonencapsulated infiltrating malignant neoplasm (two patients). Three of the four patients who had total parotidectomy had no facial palsy after the operation. One had paralysis of one division which appears to be permanent.

Nine patients are alive and well. One died of another neoplasm. There were no metastases in any of the patients. Roentgen therapy was administered to four patients postoperatively. From the analysis of this group of patients, one must conclude that these mucoepidermoid "tumors" demonstrated the clinical behavior of benign neoplasms and that their complete eradication probably would have been possible by wide local excision.

Mucoepidermoid Carcinoma

Five patients in this group had neoplasms which, because of their histologic appearance, were classified as mucoepidermoid carcinomas. It was with difficulty that some of these were distinguished from the benign mucoepidermoid "tumors." Despite the histopathology of these particular tumors, the favorable outcome in each instance prompts the clinician to question the true malignancy of the tumors in this group of patients.

All of these tumors demonstrated the diffuse fibrotic quality described in connection with the benign mucoepidermoid "tumors" in this series.

All five patients were between 30 and 50 years of age.

In three patients, operation for removal of a parotid tumor had been done previously. In one, there had been a local recurrence of a similar tumor after four years. In no instance was there clinical evidence of invasion of the facial nerve, or spread to regional lymph nodes. However, three of these patients were operated upon less than two years ago, one was operated upon three years ago, and one nine years ago.

Total parotidectomy with preservation of the facial nerve was attempted in three patients. One of these had a temporary paralysis, and one has a partial paralysis that appears to be permanent. Two patients had wide local excision of their tumors. In one of these the temporal branch of the facial nerve was sacrificed because of its apparent invasion by neoplasm. Postoperative roentgen therapy was administered to two patients.

There have been no local recurrences and no evidence of metastasis to date in any of these patients. Each one is alive and well one to nine years after operation.

From this analysis one must conclude that this group of tumors has failed to demonstrate the clinically malignant traits shown by the other groups of carcinomas in this series. Each appears to have responded to wide local excision.

Pseudoadenomatous Basal Cell Carcinoma

This unusual malignant tumor was found in eighteen patients. The age distribution was between 21 and 47 years in seventeen patients. One patient was 63 years of age. Since fifteen of the patients were women, it is suggested that this type of neoplasm is more commonly found in young and middle-aged women.

Eleven of the eighteen patients had had from one to four operations prior to admission to the hospital. In four patients, the duration of the tumor was more than ten years. In other malignant neoplasms this would suggest origin in a benign tumor; but since long asymptomatic growth is a characteristic of this tumor, no such predication should be made. Preoperative facial palsy was present in four patients. Pain was a prominent symptom in ten of the group.

Two of the patients are alive and well after total parotidectomy with preservation of the facial nerve (two years and three years). Four others are alive and well after wide excision of the tumors. Three of these latter patients were operated upon less than four years ago. The other patient who is alive and well, had the tumor removed twelve years ago. However, histologically most of the neoplasm in this latter patient was a benign mixed tumor with a few islands of carcinoma cells. This may account for the long survival period. The remaining twelve patients are either dead of carcinoma, or alive at this time with pulmonary metastasis (two patients). However, a definitive operation was not done in seven patients with far-advanced lesions.

Although all varieties of this tumor appeared to carry a poor prognosis, the cellular canalicular variant is the most malignant. Its clinical behavior parallels that of the squamous and gland cell carcinomas. The two patients who demonstrated this particular lesion died of metastases in less than a year after noticing the primary tumor. The medullary cystic and the classical types are more slowly destructive, often permitting life with asymptomatic pulmonary metastases for several years. The slow local invasiveness and the late developing metastases, together with the history of repeated operations over a period of years in several of the patients in this latter group, lead one to speculate that the prognosis might be improved greatly by instituting surgical procedures more specifically designed to eradicate a malignant neoplasm. For these reasons, a total parotidectomy should be done but the nerve may well be preserved if there is no gross evidence of its involvement in the tumor. In none of the 18 cases presented were cervical node metastases encountered. This is presumptive evidence that dissemination occurred by way of the blood stream, and that resection of the cervical nodes in these patients would not have been beneficial.

Most pseudoadenomatous basal cell carcinomas have shown some degree of radiosensitivity. In this group of tumors the far-advanced, inoperable lesions have shown regression after such therapy. There is not complete evidence that such treatment has been curative; nevertheless, each of the living patients discussed here has had irradiation during the postoperative period. Its use as an adjuvant measure in these instances may be well advised. Whether or not preoperative irradiation might prove to be more efficacious is unknown in our experiences.

Squamous Cell Carcinoma

There were eleven patients with this diagnosis. Nine were more than 50 years of age. The youngest patient was 26.

The duration of the neoplasms was variable since some are known to be primary and others to have had their origin in benign mixed tumors. Seven patients who had noted the presence of tumor for less than one year apparently had primary squamous cell carcinoma. Two of the four patients with tumors of long duration had had operations five and thirty years before.

Five patients had preoperative facial paralysis. As in all malignant neoplasms of the parotid gland, pain was a prominent symptom in a significant number (five patients in this group).

The type of operation employed as a definitive procedure was wide excision in six patients. In two of these the facial nerve was included. One of these two latter patients is alive and well after two years, while the other died with cancer after three years. Three patients had wide excision of the carcinoma but the facial nerve was preserved. One of these is alive and well after sixteen years, and two are alive with recurrence of neoplasm after two and three years. Three patients, due to the presence of far-advanced lesions, had biopsies only and died of cancer within one year. One patient had a radical excision of the parotid gland, the facial nerve, and the cervical lymph nodes, but it was thought that the operation had been incomplete and death occurred within one year. Multiple excisions were performed in two patients within the past two years, both of whom are alive with tumor.

Therefore, only two patients are alive and without recurrence of carcinoma, one and sixteen years after operation. These patients are two of the four whose tumors showed cornification in the histologic sections.

Known metastatic sites were regional nodes in three patients and lungs in one patient.

Squamous cell carcinomas are highly malignant neoplasms in this area and demand radical surgical measures to effect eradication. Wide local excision, ideally including the facial nerve or its branches adjacent to the neoplasm, together with regional cervical node resection, is necessary if the prognosis in these patients is to be improved.

Lymphoepithelioma

This tumor which is a poorly differentiated squamous cell carcinoma pursued a rapid and devastating course. There were five patients with this diagnosis, all of whom were over 55 years of age. The tumors were rather large, averaging six centimeters in diameter, and rapidly growing, less than one year in duration.

One patient had facial paralysis, three complained of pain, and two of the group had enlarged cervical lymph nodes at the time of the first examination.

All patients in this group had wide excision of the tumor and in addition, three had radical resection of the cervical lymph nodes. The tumors recurred promptly in each case although postoperative roentgen therapy was given, and all of the patients died within one year.

Known metastatic sites were regional lymph nodes in two patients, the vertebrae in one, and the abdominal viscera in another.

From this small series of lymphoepitheliomas, no conclusions can be drawn except those of desperation. Although radical excision was performed in all, with neck dissection in three, all died with carcinoma in less than one year. When present in the pharynx, these tumors often respond well to roentgen therapy. The patients with parotid lymphoepitheliomas all had such therapy postoperatively but failed to respond. It seems questionable if this tumor should be treated surgically. Perhaps roentgen therapy only should be advised if histopathologic examination of the tumor reveals this type of neoplasm.

SUMMARY

The records of 280 patients with neoplasms of the parotid gland have been reviewed. These have been reclassified after thorough and critical study of the histopathologic sections. The reclassification includes the serous cell adenoma, the serous cell adenocarcinoma, and the acidophilic gland cell carcinoma which were separated from the general group of parotid tumors and have been described as entities.

The designation pseudoadenomatous basal cell carcinoma has been selected rather than cylindroma, adenomyoepithelioma, and adenocystic or adenoid cystic basal cell carcinoma for three reasons: (1) the neoplasms are composed of small basal cells with little basophilic-staining cytoplasm and relatively large hyperchromatic nuclei; (2) a true glandular pattern is not seen; (3) in most instances the hyaline stroma of the so-called cylindroma was not the conspicuous feature of these neoplasms. Solid and cystic medullary or canalicular forms of pseudoadenomatous basal cell carcinomas are included in this material, as well as the classical cylindromatous forms.

After reclassification, it was found that in sixty-seven instances neoplasms previously interpreted as being malignant might be placed in the group of benign tumors.

In each case presented here, the study included the age and sex of the patient, the number of preceding operations, the duration and rate of growth of the

tumor, the surgical description of the tumor, and the type of operation performed. These data were correlated with the preoperative symptoms and physical findings, the histopathologic reports, and the subsequent clinical course of the patient.

All patients have had follow-up studies during the early part of 1952.

When undertaking the surgical removal of a definitely encapsulated parotid gland tumor, one may reasonably expect a good result after complete excision including the entire capsule of the tumor and a margin of normal gland where possible, since definite encapsulation of the tumor usually is evidence of a benign neoplasm. An outstanding exception to this statement is presented by some of the pseudoadenomatous basal cell carcinomas which may appear to be encapsulated. If a benign tumor has begun to exhibit early malignant change, but is still well encapsulated, such complete excision probably will be adequate.

Evidence of encapsulation of benign tumors may be obscured by recent operative trauma or by the fibrosis which occurs in the so-called mucoepidermoid tumors.

The operable malignant parotid gland tumors demand extensive surgical procedures. Those tumors which demonstrate local invasion or lymphogenous spread as evidenced by preoperative facial paralysis and regional lymph node involvement, should be attacked most radically. In these, the operation should be, in general, a combined radical cervical lymph node resection and total parotidectomy including the facial nerve. Even by such radical operations, it is obvious that some tumors arising in the pharyngeal prolongation of the gland will not be excised completely. There were some tumors in this series which were found in this location, and which although small, had already invaded the styloid group of muscles and the base of the skull. Thus, a superficially placed malignant tumor offers a greater chance for cure by radical excision.

CONCLUSIONS

This study has suggested certain conclusions which, most properly, can apply only to the group of patients presented here. However, they have been helpful in attempting to determine the type of surgical procedure best suited to a particular histopathologic type of parotid neoplasm.

The benign tumors in this series are the mixed tumors, the papillary lymphoid cystadenomas, the serous cell adenomas, the acidophilic cell adenomas, and the benign mucoepidermoid "tumors." For this group of tumors, wide local excision has been adequate. A distinct effort should be made to preserve all of the facial nerve in every instance.

The squamous and gland cell carcinomas, except for the lymphoepitheliomas, require wide excision with a radical neck gland dissection. Ideally, the facial nerve should be included in the wide excision in most instances. On certain occasions it may be deemed advisable to preserve all or part of the facial nerve; but the surgeon carries a heavy burden of responsibility when he preserves the facial nerve in the presence of a malignant tumor.

The pseudoadenomatous basal cell carcinoma has been a difficult tumor to manage. It is probable that a better planned surgical attack upon this tumor will result in an improved prognosis.

We have been unable to evaluate satisfactorily the role of roentgen therapy in the treatment of these tumors. However, it may be of greater value in the treatment of the lymphoepitheliomas

than any form of surgical treatment which we have been able to utilize.

This study has not disclosed any factors which have seemed to be conducive to malignant changes in benign tumors of the parotid glands.

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DISCUSSION

FRANK D. LATHROP, M.D., Boston, Mass.: Dr. Maxwell was kind enough to forward the original draft of this excellent paper to me for review prior to its being edited in order that it might be presented in the allotted time. The authors are to be congratulated for the self-criticism which prompted this investigation of the veracity of the survival rate for malignant neoplasms of the parotid gland as reported in a previous publication. Dr. French's reclassification of the material subsequently permitted a more accurate correlation between the histopathologic report and the clinical behavior and, as a result, permits establishment of a more exact prognosis for these neoplasms. In this connection, however, I believe that a more accurate appraisal of the malignant nature of the neoplasm can be obtained at operation when the invasive or metastatic tendencies of the tumor can be observed and correlated with a frozen section histopathologic diagnosis than can be ascertained from a preoperative biopsy specimen.

The term "malignant" is difficult to define exactly and its connotation is relative with respect to parotid neoplasms for it is colored not only by the pathologic process depicted in the sections of the tumor studied by the pathologist but by the capability of the surgeon to recognize and institute adequate surgical removal. Certainly, a so-called benign tumor of the parotid gland which has been subjected to repeated excisions until paralysis of the face, or even death, has occurred as a result of operative intervention cannot be considered as not exhibiting malignancy to some degree.

Inadequate removal of a parotid tumor is irrevocably followed by recurrence of the neoplasm and not only makes subsequent adequate removal more difficult but increases the possibility of producing a permanent paralysis of the face. Forty-eight of the 183 patients with benign mixed tumors of this presentation had had previous operation, a recurrence rate of 26 per cent. It is for this reason that I consider every benign neoplasm of the parotid gland potentially malignant. Total parotidectomy with preservation of the facial nerve is the only surgical procedure, I believe, that will permit the attainment of a minimal rate of recurrence. This is emphasized by the fact that of those patients with benign mixed tumors in whom adequate excision had been accomplished as described by the authors, the recurrence rate was between 4 and 5 per cent. On rare occasions, I have found it expedient to perform an osteotomy of the mandible in order to facilitate removal *in toto* of a large extension of a tumor into the pharyngomaxillary space as I do not believe that these should be removed piecemeal.

Carcinomas and sarcomas of the parotid gland must be completely excised if a cure is to be expected. The facial nerve should be sacrificed almost without exception under such circumstances. If it is suspected that the ascending ramus of the mandible, the mastoid

process or the cervical lymphatics are involved by the malignancy, these, too, should be sacrificed, but not until their involvement by the malignancy has been confirmed by either frozen or fixed sections. In my experience prophylactic radical neck dissection does little, if anything, to enhance the survival rate if an adequate follow-up system is maintained. Irradiation therapy with the two million volt x-ray machine appears to offer some hope to those patients presenting inoperable, recurrent or metastatic malignant disease.

In conclusion, I would like to stress the fact that the surgeon's fear of causing a paralysis of the face when removing tumors of the parotid gland probably has contributed more to failure to eradicate the neoplasm than any other factor. This need not be so. If the facial nerve is first isolated and then gently retracted out of the way while the tumor is excised, a permanent facial paralysis will be avoided. Furthermore, if it should be found necessary to sacrifice all or any part of the facial nerve, it need not condemn the patient to a lifetime of facial disfigurement for the facial nerve can be successfully reconstructed, as has been demonstrated by Maxwell, myself and others.

James H. Maxwell, M.D., Ann Arbor, Mich.: Dr. Lathrop has had a large experience in removing tumors of the parotid gland, particularly the recurrent and malignant ones. I agree with almost everything Dr. Lathrop said. We are not in disagreement regarding biopsy of parotid tumors. The statement that "total parotidectomy was done in some instances because of the diagnosis of carcinoma in previously excised tissue" did not refer to biopsy specimens. The tumors, which did not have the gross characteristics of malignant neoplasms, had been excised completely in these instances. After the histopathologic diagnosis of carcinoma was received, the more radical operation was deemed advisable and was done promptly.

In general, parotid gland tumors should not be biopsied. One should plan on complete excision the extent of which must be decided on the clinical findings, the gross appearance of the tumor at operation, and, ideally, on frozen section diagnosis. Thus, in the conclusions of the paper, I attempted to describe some gross pathologic findings which, in addition to the histopathologic diagnosis, might be helpful to the surgeon in determining the extent of the operation required.

Dr. Lathrop spoke of the 26 per cent recurrence rate in benign tumors. It is true that the number that he mentioned, I think it was 48 patients, had benign tumors excised one to ten times before we saw them. One cannot compile statistics regarding the recurrence rate from that group of patients since nothing is known regarding the type of operation that was performed prior to their examination. I do not believe that it is necessary to have a recurrence rate that high; nor do I maintain that the recurrence rate is 4 per cent after a single operation as might be suggested by this study. The recurrence rate cannot be determined with accuracy even after observing patients for twenty years since recurrences have been discovered after that period of time. It is not known whether these late recurrent benign tumors are the result of slow growing residual neoplasm or whether they represent tumors of multicentric origin. I have seen two patients, each of whom had two separate and distinct well-encapsulated benign mixed tumors in the parotid gland. There seems to be good evidence that some of the recurrent benign mixed tumors have been "seeded" at the time of the previous operation.

THE SPHINCTERS OF THE LARYNX

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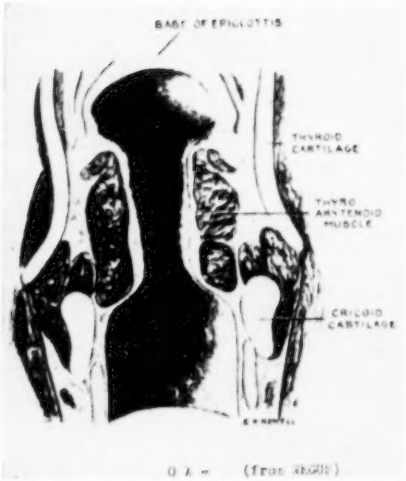

FIG. 1—Type of larynx which closes by virtue of sheer muscle power without valvular effect (from Negus).

BY WAY of introduction I need to remind you that the production of sound is not the reason for the existence of the mammalian larynx, for there are mammals with larynges and no voices and, on the other hand, mammals with voices and no larynges. The two do not necessarily go together. If this be true, what then is its basic purpose?

The larynx is actually a sphincter—a sphincter which physiologically isolates the respiratory tract below it from that above.[2-8] This is its primary purpose. There are, throughout the animal kingdom, no exceptions. The ability of the larynx in man to contribute to the production of sound is nothing more than a fortunate side effect.

I need, too, to point out that there are many types of larynges representing many types of sphincters. The human larynx, for instance, is a three-tiered sphincter, the first being the true vocal cords, the second being the false vocal cords, and the third being the aryepiglottic sphincter.

Some larynges as described in Negus' classic text, *The Mechanism of the Larynx*,[5] are of simple construction (fig. 1), being nothing more than massive rings of muscle forming a circular band, which by virtue of sheer power closes the inlet to the thorax. This is a crude, not very highly differentiated type of sphincter which closes and occludes by constriction of circularly placed fibers, just as does the pylorus. But quite in contrast to this, certain species enjoy a tremendous advantage in that the mechanical construction of the sphincter

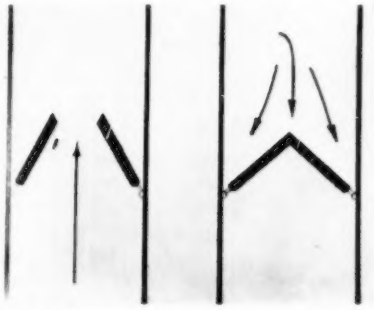

FIG. 2—Mechanism utilized by valvular type larynges.

From the Department of Surgery, University of California at Los Angeles School of Medicine.

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brings the principle of a valve into play, this valvular effect being far more efficient than muscle action alone.[1]

Such a valvular system inside a tube representing the trachea is demonstrated in figure 2. If, as demonstrated by the figure on the left, pressure is exerted upon it from below, the valve is easily forced open. If, as demonstrated on the right, pressure is exerted from above, the valve is forced closed. It is probable that in a larynx embodying these principles the intrinsic muscles serve to bring the structures into the closed position, after which force exerted upon them in the proper direction is resisted by the valvular nature of the closure, which far exceeds that of the muscle strength alone.

The larynx of the lion, as illustrated by Negus,[5] (fig. 3) is the exact counterpart of the mechanical drawing I have just shown you and an excellent example of a valvular type of laryngeal sphincter. Notice that there are not two tiers of vocal cords forming, as in the human larynx, true and false cords respectively, but only one which is called a vocal fold. This larynx is therefore a one-way valve which opens in response to pressure exerted upon it from below.

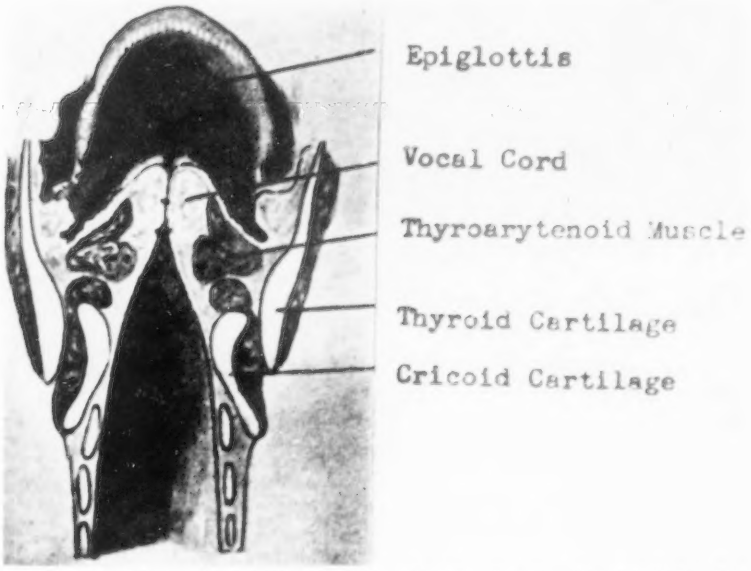

FIG. 3—Type of larynx demonstrating single tier of vocal cords acting through valvular effect (from Negus).

Figure 4 demonstrates a transverse section, establishing the human larynx as an organ in which, by the intrusion of an inpocketing or ventricle, the vocal cord mass becomes split into two components. These are the true and false cords respectively, each of which forms an independent sphincteric tier. The true cords mechanically from the valvular standpoint, are the counterpart of the single folds which you have just seen constituting the basic structure of the larynx of the lion. The false cords,

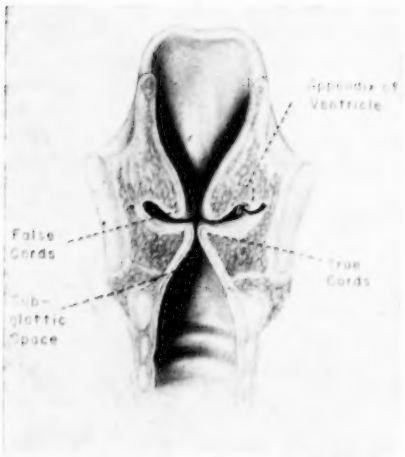

FIG. 4.—Coronal section of the human larynx exhibiting two tiers of valvular sphincters, each functioning in the opposite direction.

however, more closely represent the basic sphincteric purpose of the larynx than do the true cords, since the latter have in the process of evolution become highly specialized. Their margins have become thin and bandlike and their muscular structure has come to be such that fine adjustments of contour, length, tension and thickness are possible which enables us to control the pitch of sounds produced in phonation. Insofar as its sphincteric effects are concerned, the mechanical principle involved, as seen in figure 2, demonstrates that when even trifling pressure forces are exerted from below, the true vocal cord sphincter opens readily but in a controlled fashion which, as an adaptation to the function of sound production permits the passage of air from below, resulting in sound-producing vibrations. The true vocal cords however, as can be seen from the diagram, resist pressure from above.

The upper component of this split vocal fold, the false vocal cords, when closed, similarly exerts sphincteric valvular effects but due to its anatomical contour the direction of valvular resistance is reversed and the valve is effective in the opposite direction. The false vocal cords, as demonstrated in figure 5, therefore resist forces from below, rather than opening in response to them. Thus when closed they become valves able, for example, to trap air below the level of the larynx. This air trapping is necessary for producing increased intrathoracic pressure as required in cough, or increased intra-abdominal pressure as takes place in defecation, urination, parturition, and other similar functions.

The closure of this false cord sphincter valve, despite all the trimmings, is still nothing more than the circular form

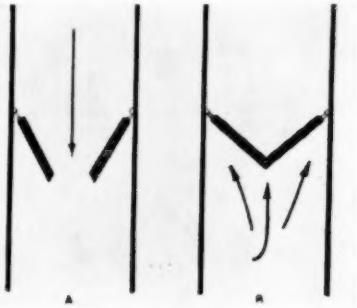

FIG. 5.—Valve representing direction of action of the false vocal cords.

of muscle closure of the more primitive larynges. Figure 6 is a series of photographs (made by using frames of a motion picture) of the human false cord sphincter in various stages of closure. Notice that closure of this false cord sphincter is preceded by complete closure of the true vocal cords, the false cords closing over them.

The presentation of this set of photographs is a good opportunity to reopen the discussion as to whether, as stated in some standard texts, closure of the false vocal cords results from closure of

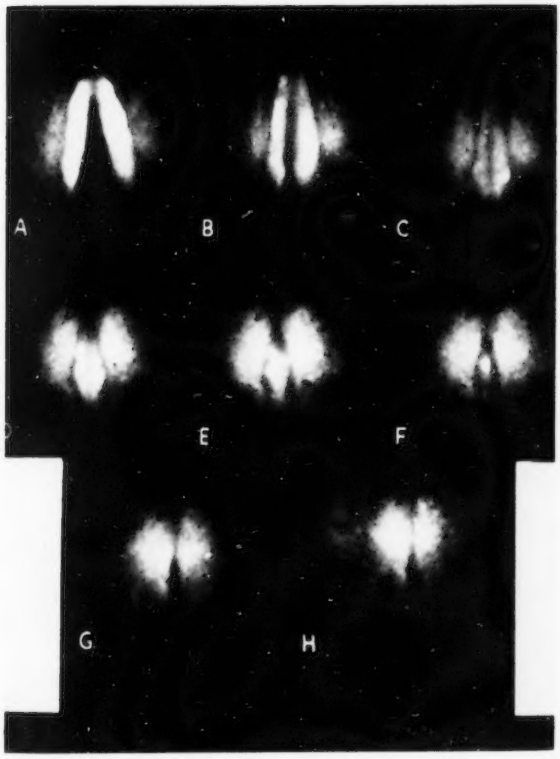

FIG. 6.—Closure of the human false vocal cord sphincter.

the arytenoid cartilages. I rather doubt it, since as you see in these pictures, closure of the true cords which is accomplished by rotation of the arytenoids has been completed almost before closure of the false vocal cords begins. Furthermore I have seen two instances in which false vocal cords closed completely with no action of the arytenoid cartilages having taken place at all. One was in a bilateral recurrent laryngeal nerve paralysis from a central lesion which did not involve fibers to the false vocal cords, and the other was in a patient with bilateral fixation of the arytenoids from arthritis.

The method by which the false cords close is therefore, I believe, not one resulting from arytenoid rotation, but is rather a true, circular, sphincteric closure, representing a throwback to the most primitive form of circular muscle sphincter. This is demonstrated by the primitive larynx on the left, which develops through intermediate forms containing cartilage and split muscles as indicated in the center, to the human larynx which is demonstrated on the right in figure 7.

Besides the true vocal cords and the false ones, a third laryngeal sphincter exists. It is perhaps the most important

of all in that it plays a vital role in the protection of the lower respiratory tract by preventing the invasion of foreign material. It is strategically located high in the larynx at the level of the inlet, and is composed of several structures, principally the folds or shelves that pass from the arytenoid cartilages to the epiglottis. They are called the aryepiglottic folds, and I call the sphincter they form the "aryepiglottic sphincter."

two structures which have not been adequately stressed, these structures playing roles in the anatomical formation of this sphincter. I shall in a moment discuss these functions in detail, but preliminarily would like to point out that they are the tubercle of the epiglottis and the cuneiform cartilages, or the cartilages of Wrisberg, both of which structures show in the drawing although not labeled. The first of these, the tu-

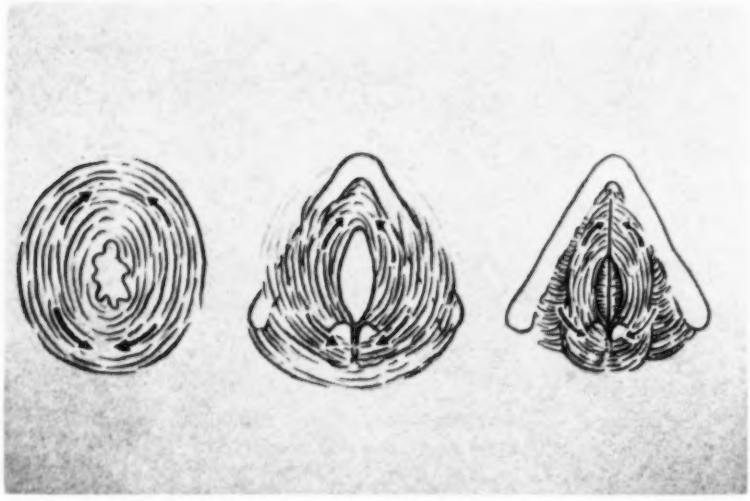

FIG. 7.—Theoretical stages in the evolution of the human-type larynx.

This is demonstrated in figure 8. The muscular structure is composed of two groups of fibers, first those arising from the thyroarytenoidei which pass upward along the lateral wall of the larynx to enter the aryepiglottic folds, and a second group of fibers from the decussation of the interarytenoidii muscles which sweep around in an encircling fashion to enter the folds and become part of them.

The recognition of the aryepiglottic sphincter as a functioning organ explains at least in part, the functions of

bercle of the epiglottis, in the closed state fills a dehiscence which exists anteriorly between the two folds, so that we can rightfully say the purpose of the tubercle is to complete the closure of the aryepiglottic sphincter.

The cartilage of Wrisberg which is the second of the two structures to which I would like to ascribe a special function, sits in the aryepiglottic fold as a sesamoid cartilage, its purpose being to serve as a stiffener for these folds much like the stays in a corset, or the batten one places in a sail. They similar-

FIG. 8.—Structure of the aryepiglottic folds.

FIG. 10.—The closed aryepiglottic sphincter.

ly remind one of the cartilaginous strut we place in a columella to lend it rigidity.

The detailed anatomy of this closure is worth demonstrating since it is not generally well known, and is shown in figures 9 and 10, the first of which is for comparison. Figure 9 demonstrates the open aryepiglottic region, showing the epiglottis and its tubercle, the open aryepiglottic folds, and the cartilages of Wrisberg which appear foreshortened due to their being more or less on end.

FIG. 9.—The open aryepiglottic sphincter.

Figure 10 demonstrates the anatomy of closure of this aryepiglottic sphincter. The closure consists of an approximating or purse string action of the folds themselves, which leaves a dehiscence anteriorly and another posteriorly. The posterior dehiscence is filled in by the arytenoid cartilages which tilt forward to close this defect, and I especially call your attention to the fact that the tubercle of the epiglottis performs its function by filling in the anterior dehiscence. The free border of the epiglottis plays no role in this function. Notice the cartilages of Wrisberg which are now demonstrated in full length, sitting as stiffeners in the aryepiglottic folds.

Figure 11 is an actual photograph of this closed sphincter reproduced, with their kind permission from the Bell Telephone Company's motion picture film. The structures I have described as taking part in the closure are clearly demonstrable, "A" representing the margin of the epiglottis which plays no role in the closure; "B" the tubercle of the epiglottis filling in the anterior dehiscence; "C" the arytenoid cartilages filling in the posterior dehiscence; and "D" the aryepiglottic folds themselves.

This then is the uppermost of the three tiers comprising the sphincteric system of the human larynx. It closes in response to the need for protection and thus comes into play during retching, gagging, swallowing and vomiting, or when a foreign body threatens to enter the larynx. It does not, as far as I know, close for sphincteric purposes of increasing intra-abdominal pressure, the latter being a function of the false vocal cords, which with a mirror can, under proper conditions, be seen to close without closure of the aryepiglottic folds. This phenomenon can be seen by asking

a cooperative patient to squeeze a pillow as in a "bear hug" while the larynx is being examined.

FUNCTIONS OF THE SPHINCTERS

The Protective Function

I have come to believe the protective function is more closely bound with closure of the aryepiglottic sphincter than with that of the false vocal cords which lie at too low a level in the larynx to be of much value in this respect. Anatomically this is a reasonable conclusion, for in figure 12 illustrating a foreign body impeded by the closed false vocal cord sphincter, it is demonstrated that by the time the foreign body has reached the level of the false cord sphincter, it is already well within the confines of the larynx, so that when the false cords open as they must, the foreign body drops through them into the depths of the trachea. Occasionally, a forceful cough will expel foreign bodies resting upon the false cords. Therefore the function of protection is shared to some extent by these structures, but this function is more effectively served by the aryepiglottic sphincter as demonstrated in figure 13.

This sphincter is highly placed at the inlet so that a foreign body or foreign substance attempting to enter the larynx and impeded by it is effectively deflected away from the larynx, rather than entering it. The aryepiglottic sphincter is therefore particularly effective in this regard and responds by adequate closure to the stimuli of foreign bodies. It is of some interest to analyze the response to stimuli initiated by foreign substances which threaten to invade the area of the larynx. Response to stimuli arising in the hypopharyngeal area, apparently is a very highly selective phenomenon based on minor differences in the site of origin of the stimulus. Thus when the stimulus arises above the level of the aryepiglottic sphincter the protective response is that of the gag reflex, with resulting closure of the aryepiglottic folds. However, no cough is pro-

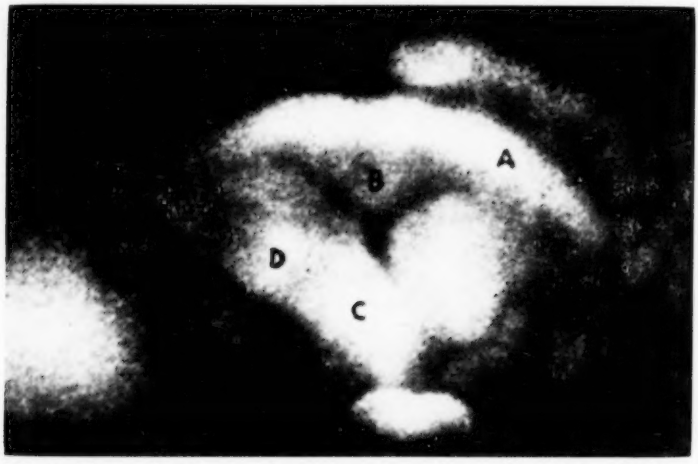

FIG. 11.—Photograph of the closed human aryepiglottic sphincter (from the Bell Telephone Company).

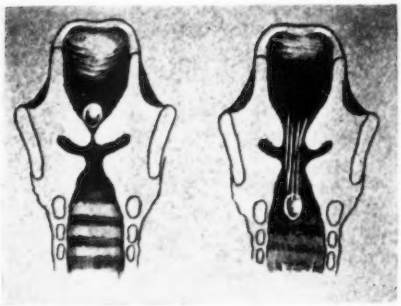

FIG. 12.—Demonstrating ineffective action of false vocal cords in protecting lower respiratory passages from the invasion of foreign bodies.

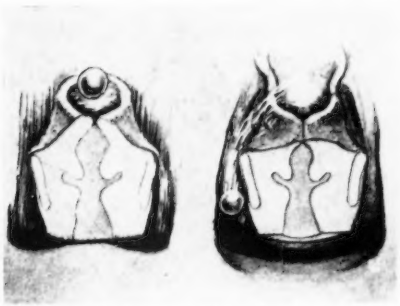

FIG. 13.—Effective protection afforded lower respiratory passages by closure of aryepiglottic sphincters.

duced until the stimulus arises from below that level, but when it does, the false cords respond by closing, rather than the aryepiglottic folds.

Functions Related to Air Trapping

The remainder of the functions affected by the action of the sphincters of the larynx involve chiefly the false vocal cords. Their closure by trapping air within the thorax, tends to fix the diaphragm which cannot be appreciably elevated or depressed without changes in the volume of thoracic air.

This combination of closure of the false vocal cords resulting in thoracic air trapping and immobilization of the diaphragm has several far-reaching effects. For example, it minimizes movements of the thoracic cage, thus providing a fixed point of origin for the muscles of the pectoral girdle, and thereby supposedly increasing their efficiency.

Based, however, upon results obtained from experiments in which the strength of pectoral girdle muscle action was tested against spring scales, as demonstrated in figure 14, with and without an occluded airway, some doubt exists in my mind as to whether a closed larynx does increase the strength of pectoral action. From observations of everyday life, I am willing to believe that this is so and concede that the experiment is faulty, since when we use our arms forcibly as in hoisting a sail or lifting a weight, we invariably take a deep breath and hold it, thus fixing the thorax, and seem less efficient when we fail to do so. But I have been unable to prove any increase in efficiency by experimental observations.

Of more importance than the debatable point of its effect upon pectoral girdle function, is the fact that this valvular closure of the false cord sphincter resulting in trapping of thoracic air and fixation of the diaphragm, without any question plays an important quantitative role in our ability to increase intra-abdominal pressure as is required for instance in urination, defecation and vomiting. It plays an even more important role in enabling us to effectively increase intrathoracic pressure as required for satisfactory cough.

To enable you to better visualize the physics involved, I have prepared a series of mechanical drawings. Figure 15 shows the torso as a container in which the abdominal cavity is represented by compartment "A" and the thoracic cavity represented by compartment "C." The diaphragm at "B" is represented as a free moving piston, and at "D" the

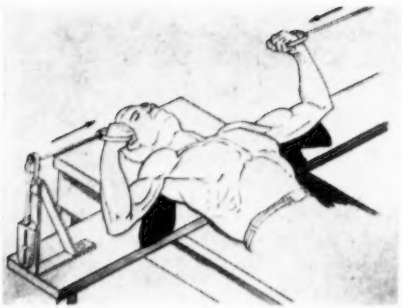

FIG. 14—Technic of testing strength of pectoral muscles.

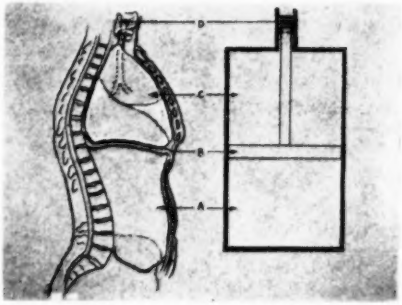

FIG. 15.—Diagrammatic representation of the cavities of the body as pressure chambers.

respiratory outlet is occluded by an obturator or cork which represents the closed laryngeal sphincter.

Figure 16 demonstrates the difference between attempts to increase intra-abdominal pressure with the sphincter open and closed. "A" represents an open system with the obstructing obturator removed. As demonstrated in "B," efforts to increase intra-abdominal pressure with an open airway instead of doing so, simply force the diaphragm upwards, expelling air from the thorax which escapes through the trachea. On the other hand figure "C" indicates what occurs when the outlet is occluded. This is indicated by the insertion of the cork in the drawing representing the closed laryngeal sphincter in the mammal. Efforts to increase intra-abdominal pressure under these conditions are more successful since, with the airway occluded, the diaphragm cannot be elevated by the increase of pressure below it, for in order to become elevated it must encroach upon the confines of the thorax. This it can do only if room is made for it by the expulsion of air from the lungs. Since escape of pulmonary air cannot take place in the presence of the closed sphincter, the diaphragm under these conditions cannot be made to encroach upon the thoracic space. It therefore remains fixed, resisting the pressure from below which now steadily increases.

These effects are not absolute so that it cannot be said that loss of sphincteric function of the larynx results in total loss of ability to increase intra-abdominal pressure, but the laryngeal sphincter mechanism plays a quantitative role, and I shall present experiments performed for the purpose of determining the extent of this quantitative factor.

A series of experiments have been carried out, and previously reported, upon patients being treated routinely by bronchoscopy and upon tracheotomized

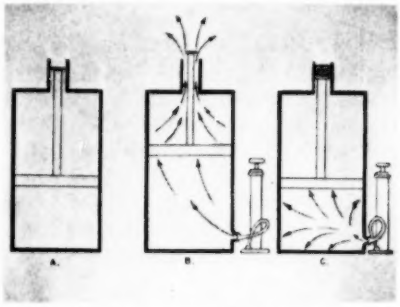

FIG. 16—(A) Resting state. (B) Demonstrating failure to effectively increase intra-abdominal pressure with larynx open. (C) More effective increase of intra-abdominal pressure resulting from closed laryngeal sphincter.

TABLE I

AVERAGE LOSS DUE TO PATENCY OF AIRWAY

	STRAINING (VOLUNTARY)	COUGH (INVOLUNTARY)	EXTERNAL PRESSURE (PASSIVE)
Bronchoscope, 7 patients	17.5%	17.5%	
O'Dwyer tube, 4 patients	18%	Tubes extruded	
Tracheotomy tube, 3 patients	22%	29% (21% to 37%)	45%

Note: Individual observation;
Percentage loss minimum = 9%
Percentage loss maximum = 37%

surgical cases.[6] In the first series, the sphincter of the larynx was rendered nonfunctioning and the airway maintained patent by the insertion of a bronchoscope which was retained in situ during the experiments. A second series of observations were made with an O'Dwyer tube performing the same function, and the third series was carried out on tracheotomized patients. While the bronchoscope or the O'Dwyer tube was retained in situ, the urinary bladder was filled with saline and a catheter inserted into it and attached by a "Y" adapter to a manometer through one limb, and to a reservoir of saline through the other. As intra-abdominal pressure was increased by willful efforts on the part of the patient this was reflected in the values of intravesicular pressures which were read directly from the manometer. Efforts to increase intra-abdominal pressure were (1) voluntary on the part of the subject by contracting the abdominal muscles, (2) involuntary resting from cough and (3) passive resulting from external pressure upon the abdomen by inflatable cuffs or the observer's hands. The various types of cannulas were left patent and readings made. These were repeated with the cannulas occluded simulating the effects of the closed sphincter, and comparative readings recorded. Details of each case in each experiment have been previously published, and need not be quoted. The averages, however, are of interest.

The figures in the left hand column of table I indicate voluntary straining reasonably consistent throughout the series, regardless of the types of cannula used to render the sphincter nonfunctional. Attempts to increase intra-abdominal pressure in the presence of a patent airway were 17.5 per cent less effective when the bronchoscope was unoccluded, as compared to readings obtained when its lumen was occluded by the observer's finger. In the presence of an O'Dwyer tube permitted to remain patent, ability to increase intra-abdominal pressure was lessened by 18 per cent as compared with an occluded respiratory tract resulting from closing the mouth and nose over the O'Dwyer tube. A loss of 22 per cent in ability to increase intra-abdominal pressure resulted with a tracheotomy tube remaining patent rather than being occluded by a stylet.

In the instance of cough as noted in the center column, the loss with non-occluded bronchoscopes was again about 17.5 per cent. Cough experiments could not be carried out with the O'Dwyer tube, because the tubes were invariably extruded by the cough, but in the tracheotomy series a 29 per cent loss of ability to increase intra-abdominal pressure resulted from the tube remaining patent as compared to being occluded.

A few experiments, as indicated in the right hand column, were carried out with external passive pressure be-

ing applied to the abdomen. The elevation of intravesicular pressure which resulted with the tracheotomy tube occluded, was 45 per cent greater than when patent.

Thus conservatively estimated, and considering all the figures of many experiments, it is safe to say that loss of the sphincter action of the larynx in the normal healthy subject results in a loss of something in the neighborhood of 20 per cent in our ability to increase intra-abdominal pressure. Under certain conditions it is probably higher; but this is not known, not having been studied, for instance, in weakened or debilitated patients in whom I would guess the percentage value of sphincteric effect would be much greater, due to the loss of forcefulness of abdominal and thoracic muscular contractions.

That this loss can at least in part be correlated with an accompanying increased excursion of the diaphragm becomes evident from simultaneous observations made under the fluoroscope as shown in table II.

Diaphragmatic levels during different phases of changes in intra-abdominal pressure were marked on the chest with lead strips and the excursion subsequently determined by measuring the distance between these strips. Studying the averages obtained, as indicated in the lowermost column, it can be observed that a closed respiratory system permitted the diaphragm under the conditions of the experiment, to be displaced upwards for a distance of only 1.5 cm. When, however, the airway was rendered patent, an increased excursion to 3.5 cm. took place. As a control, using passive efforts by the application of forceful pressure to the abdomen by the hands of the observer, or a pressure cuff, rather than depending upon active efforts on the part of the patient, there resulted a proportionate increase of excursion from 2.2 cm. with the airway occluded to 3.5 cm. with the airway patent. Thus in patients with non-occluded airways, inability to elevate intra-abdominal pressure to its maximum was invariably accompanied by an increased excursion of the diaphragm. The corollary is likewise true. In order to increase intra-abdominal pressure to its maximum, the laryngeal sphincter must remain closed, and the diaphragm maintained in a fixed position.

TABLE II

ELEVATION OF DIAPHRAGM (FROM LOWEST RESPIRATORY LEVEL) TRACHEOTOMIZED SUBJECTS

	Active Attempt To Increase Intra-abdominal Pressure		Applying External Abdominal Pressure	
	Tracheotomy tube closed, cm.	Tracheotomy tube open, cm.	Tracheotomy tube closed, cm.	Tracheotomy tube open, cm.
Subject A	1.0	2.0	1.0	2.5
Subject B	2.0	4.5	3.0	4.0
Subject C	1.5	4.0	2.5	4.0
Average	1.5	3.5	2.2	3.5

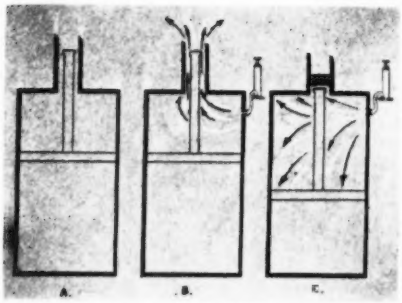

FIG. 17.—(A) Resting stage. (B) Larynx open. Attempt to increase intrathoracic pressure ineffective. (C) Larynx closed, resulting in effective increase in intrathoracic pressure.

For one brief moment I want to mention increases in intrathoracic pressure such as occur in cough. Normal, effective, forceful cough requiring maximum increases in intrabronchial pressure is invariably accompanied by closure of the false cord sphincter. If it is not, as in figure 17 "B" (which demonstrates an open airway), contraction of the chest wall simply results in the escape of air through the airway, but with no increase in intrathoracic pressure. Thus an ineffective cough is produced. However, as shown in "C," when the neck of the container is occluded by a cork (or in a mammal when the trachea is occluded by closing the sphincter), intrabronchial and intratracheal pressure can be built up to its maximum. When the sphincter is suddenly released, the blast-like escape of the accumulated pressure constitutes the effective cough. Normal cough is therefore always preceded by closure of the laryngeal sphincter at the level of the false cords.

CONCLUSIONS

The sphincters of the larynx consisting of (1) the aryepiglottic sphincter, (2) the false vocal cords and (3) the true vocal cords serve four functions: (1) they aid in the regulation of intra-abdominal pressure; (2) they aid in the regulation of intrathoracic pressure; (3) they protect the lower respiratory passage from invasion of foreign matter, and (4) they play a somewhat doubtful role in the action of the pectoral group of muscles.

There are many secondary side effects which can in one manner or another be ascribed to one or more of these basic functions, such as the effect upon the circulation of the blood or the interchange of gases through the pulmonary alveoli; and many other subdivisions can be included such as the nine described by Chevalier Jackson, but in the main none of these falls outside the limits of these four categories which represent the normal functions of the sphincters of the larynx.

I have been tempted to add another but have avoided doing so because it does not fall within the realm of the normal. However, one must not overlook the very important fact that in the absence of true vocal cords as after surgery, or even in the presence of true vocal cords which are diseased or malfunctioning, the false vocal cords by virtue of their ability to undergo sphincteric closure can take over the function of sound production as related to speech. In a sense then, they are a spare pair of vocal cords utilized for speech.

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DISCUSSION

A. C. Furstenberg, M.D., Ann Arbor, Mich.: Dr. Pressman has added another significant chapter to the progress of laryngology. His well-organized and magnificently presented paper has established sound reasons for symptoms frequently observed in central nervous system disease, and created an epoch in our knowledge of the function of the larynx.

I should like to dwell briefly upon some of the practical applications of Dr. Pressman's important observations. Specifically I should like to deal with the central nervous system control of the larynx and the functional effects of any disturbance of this control by pathologic changes in the brain stem.

As a preliminary to this discussion, your attention is called to the cells or origin for the superior laryngeal and the recurrent laryngeal nerves which are found in the nucleus ambiguus within the medulla oblongata. Here we find a localization pattern for certain muscles of the larynx which was described by Szentagothai in 1943. This author demonstrated by selective destruction of parts of the nucleus ambiguus in the cat and subsequent degeneration of the laryngeal nerves and paralysis of the muscles that from rostral to caudal in the nucleus ambiguus (behind the stylopharyngeus center of the glossopharyngeal) the arrangement of muscle innervation of the larynx is as follows: the cricothyroideus (from the superior laryngeal nerve), crico-arytenoideus dorsalis, thyro-arytaenoideus, crico-arytenoideus lateralis, and arytaenoideus muscle. Because such a pattern does exist, it is possible for a central lesion to produce a paralysis of one or more muscles of the larynx without necessarily an involvement of all of them. It is, however, quite unlikely that a peripheral lesion could be so small and selective as to produce a similar dysfunction of isolated laryngeal muscles.

I have no doubt of the accuracy of Dr. Pressman's observation when he states that he has seen a patient with a bilateral recurrent laryngeal nerve paralysis from a central lesion in whom the false vocal cords closed completely with no associated action of the true cords. It is an established fact that this *does* occur and the anatomical explanation is readily found in the pattern of the motor cells of origin of the superior laryngeal and the recurrent laryngeal nerves in the nucleus ambiguus of the medulla.

It is perhaps timely to emphasize that in bulbar poliomyelitis the nucleus ambiguus may be only partially affected bilaterally, with normal function of the false vocal cords and aryepiglottic sphincter, but with varying degrees of paralysis of the true vocal cords as evidenced by an altered voice. The type of paralysis is necessarily flaccid. Respiratory difficulties are not likely to occur in a central lesion of this character. When, however, in pontobulbar poliomyelitis the nucleus ambiguus which contains the cells of origin of the motor fibers of the glossopharyngeal, vagus, and bulbar accessory nerves is seriously involved bilaterally the prognosis is grave because of paralysis of the sphincters of the larynx and consequent aspiration of saliva and pharyngeal secretions into the lower air passages. While the ability to cough may be diminished only 17 or 18 per cent, as demonstrated by Dr. Pressman, this interference is sufficient to make adequate clearing of the airway impossible. An inability to keep saliva or other foreign matter out of the larynx is likewise associated with a paralysis of the aryepiglottic folds. Obviously the clinical findings in bulbar poliomyelitis document Dr. Pressman's results.

It must be stated, however, that in some cases of bulbar poliomyelitis there is an associated cervical cord involvement with a disturbance in the innervation to the diaphragm. This is invariably a grave situation because of the patient's extreme difficulty in breathing and coughing. Yet it is a notable fact that we frequently observe serious interference with the coughing reflex in brain stem lesions when the cervical cord is untouched and innervation to the diaphragm is unaffected. Thus Dr. Pressman's results are explained again on anatomical principles.

We find in Dr. Pressman's epochal studies strong support for the therapeutic manage-

ment of bulbar poliomyelitis advocated by Dr. Galloway, which stresses, clearly and so vigorously, the importance of posture, continuous water suction of the pharynx and tracheotomy; those measures essential to the maintenance of a clear airway. An understanding of Dr. Pressman's fundamental studies and the early institution of Dr. Galloway's therapeutic regimen will save many a patient from the cerebral cortex symptoms, anxiety, fear, mental confusion, and coma due to cortical anoxia, and perhaps also from death.

THOMAS C. GALLOWAY, M.D., Evanston, Ill.: This fine presentation adds considerably to our knowledge of the physiology of the larynx. I shall briefly discuss some of the clinical implications.

The patient with severe bulbar poliomyelitis may be on the horns of a horrible dilemma. He must breathe to live, yet, if he breathes he may be drowned by his own unswallowed secretions. Negus has indicated that the primitive and primary function of the larynx is the protective one. Dr. Pressman has shown how powerful and effective the defensive closure of the larynx may be. Coryllos in submersion experiments on dogs found that this closure may continue to the point of complete asphyxia, in spite of strong respiratory efforts. In some animals death occurred without any fluid reaching the lungs. In others it apparently did so in the stage of agonal depression. Motley says the same thing may happen in human drowning.

These considerations point up the importance of spasm in bulbar poliomyelitis and other conditions with secretional obstruction. The situation is likely to be much more urgent than that commonly visualized as a slower flooding of the lung bed. Only seconds may remain to save a life. If fluid cannot be removed and kept removed by postural drainage and continuous suction it and the area of spasm must be passed by tracheotomy.

The same situation may obtain in tetanus, botulism and diphtheria; in drug poisoning and anesthetic depression; in craniocerebral injuries, vascular accidents and other brain disease. Already severe central depression may if possible add to the urgency of relief in such situations.

Cough is another problem in poliomyeltis, especially with the patient in the respirator. It apparently may be met in a measure by manual pressure to aid sharp expiration. Another mechanism is the "exsufflator" of Barach which builds up a high negative pressure to about 40 mm. of Hg and then suddenly releases this. It is reported effective in the relief in atelectasis. In the convalescent stage of bulbar poliomyelitis before the tracheotomy tube may be safely removed, I have found the patient's ability to clear the airway by cough may be greatly aided by covering the tracheal cannula or by reducing the tube to no. 2 or 3.

Another bothersome problem especially this year in poliomyelitis has been the slow return of the protective function of the larynx although the cords may be seen to be adducted in phonation. I had assumed that this was because of tolerance to fluid established by habituation to feeding tubes or secretion, just as cocaine applied to the posterior pharyngeal wall and base of the tongue may abolish the swallowing reflex. It is possible, however, that the smooth flow of coordinated impulses from the hypoglossal, glossopharyngeal and vagal and accessory nuclei necessary to this rather complex act may have remained disturbed. Failure of closure of the superior sphincter of the larynx described by Pressman may be a vital factor in the inability to swallow and the persisting tendency of overflow into the trachea that has occurred in some of these cases. We have assumed because the swallowing function usually completely returns and because the nuclei concerned are separated that there is no true swallowing center. It may be after all, however, that the coordinating area is sharply limited.

A TECHNIC FOR EXTIRPATION AND REPLACEMENT OF THE LATERAL CANTHUS

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Loss of the lateral canthus may arise from various causes; however, surgical excision for neoplastic disease of this region is probably the most frequent. Excision of a cancer must be sufficiently radical to include all of the diseased tissue, and reconstruction is difficult because a number of complicated structures are involved. Segments of lids and lid margins, lashes, cul-de-sacs and the lateral canthal ligament, all must be replaced. If the surgeon is misdirected into conservative excision through fear of creating a large defect, future trouble is in store for the patient. Closure of these large defects will be found less difficult by the method presented in this paper. The author has found this method most useful in restoring both the function and the normal appearance of the structures.

Cancers of the lateral canthal region are sometimes inadequately excised because a means of exposure of the internal surface of the lateral canthus is not clearly understood. The proper technic for excision consists of making vertical incisions completely through the upper and lower lids at a safe distance medial to the lesion, then extending these incisions horizontally toward the temple, again penetrating all layers of lid tissue, to a point beyond the lateral extremity of the growth (fig. 1A). The lateral segments of the lids then may be everted to provide excellent exposure of the extension of the lesion on the conjunctival aspect of the lateral canthus. Under direct vision, the diseased conjunctiva, lateral canthal ligament, muscles and skin are divided to complete the excision. Since cancer of the lateral canthus frequently arises in the lower lid, the surgical defect is usually greater in the lower than in the upper lid.

Reconstruction is begun by grasping the margin of the remaining portion of the upper lid with an Erhardt clamp, as is customary in tarsectomy, and making an incision through tarsal conjunctiva and tarsus 3 mm. above the lid margin and parallel to the lid margin (fig. 1B). This leaves an untouched strip of marginal tarsus which is necessary for preservation of anatomic continuity in reconstruction of the border of the lid. Failure to leave this strip of tarsus results in a defect in the lid margin and defeats the purpose of subsequent details in the procedure. From the medial end of the tarsal incision, a vertical incision is made through the tarsoconjunctival layer high into the upper cul-de-sac. The horizontal width of the advancement flap thus created from the upper tarsoconjunctival layer (fig. 1C) is determined by the size of the surgical defect in the lower lid. Care is taken to extend the dissection of the flap superiorly along the inferior surface of the levator as a precaution against excessive arching of the upper lid by levator pull after the final stage of the procedure. Blunt, spreading dissection maintains the proper plane of cleavage and avoids injury to the levator fibers.

Presented at the Special Program on Plastic Surgery during the Fifty-Seventh Annual Session of the American Academy of Ophthalmology and Otolaryngology, Oct. 12-17, 1952, Chicago, Ill.

The remaining conjunctiva of the lower lid below and lateral to the eyeball is undermined and attached to the edge of the advanced tarsal flap by a continuous suture of dermalon. The suture is anchored to the skin medial to the flap and passes through the full thickness of

A groove, 2 mm. in depth, is now made with a cataract knife in the plane of the grey line at the lateral extremity of the remaining lower lid. A similar groove is made in the upper lid at the lateral end of the intact strip of marginal tarsus (fig. 1E). A double-armed

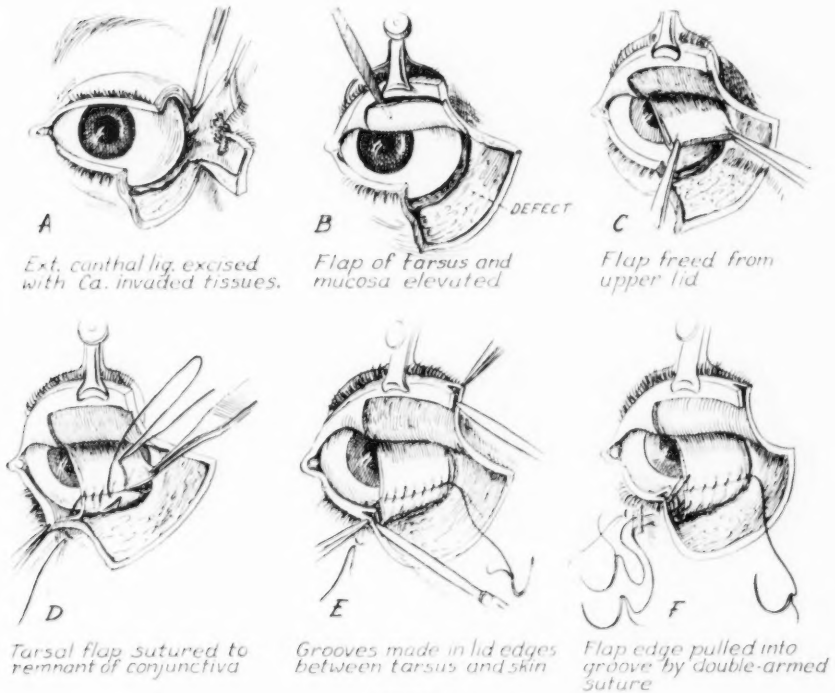

FIGURE 1.

the lower lid at the edge of the defect (fig. 1D). A simple continuous whipstitch is employed to unite the tarsoconjunctival flap to the lower remnant of conjunctiva in order that the suture may be removed after healing takes place. The temporal end of the suture is left free until a later stage of the repair (fig. 1E).

suture pulls the tarsoconjunctival flap, and the conjunctiva to which it has been sutured, into the groove of the lower lid (fig. 1F). This complicated suture is made by first passing one end of the suture through the conjunctiva and tarsus of the lower lid into the apex of the groove and out through the skin. The procedure is then repeated with the oth-

er arm of the suture at a point near the inferior border of the tarsus of the lower lid. The loop made with the lower arm of the suture pulls the lower lid conjunctiva which has been anchored to the flap into the groove. Thus the flap is made to interdigitate between the layers

the defect has been undermined (fig. 2G) and the temporal fascia exposed, a flap of temporal fascia is fashioned with its base in the periosteum of the orbital rim to simulate the lateral canthal ligament. This flap is 6 mm. wide and of sufficient length to reach the normal

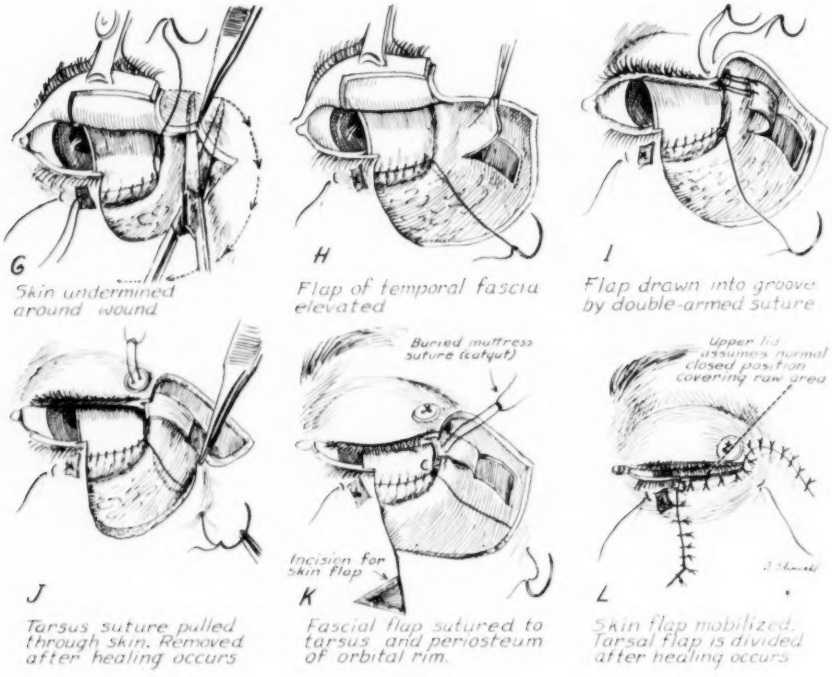
G
Skin undermined around wound
H
Flap of temporal fascia elevated
I
Flap drawn into groove by double-armed suture
J
Tarsus suture pulled through skin. Removed after healing occurs
Buried mattress suture (catgut)
Incision for skin flap
K
Fascial flap sutured to tarsus and periosteum of orbital rim.
Upper lid assumes normal closed position covering raw area
L
Skin flap mobilized. Tarsal flap is divided after healing occurs

FIGURE 2.

of the lower lid, and the inferior edge of the tarsus of the lower lid is aligned with the inferior edge of the tarsal flap. The two needles are then passed through a small rubber plate and the sutures are tied as shown in figures 1F and 2G.

The groove in the upper lid is used for implantation of a new lateral canthal ligament. After the skin peripheral to

position of the apex of the groove in the margin of the upper lid. When doubt exists as to the required length, it is wise to make the flap too long rather than too short. The extra length may be sacrificed after the correct length has been determined by opposing the flap within the groove under the desired tension. It is important to carry the dissection of the base of the flap medially over

the bony orbital margin so that the attachment of the new ligament is as close as possible to the normal site of the ligament. This measure prevents the new ligament from exerting a pull forward rather than laterally, as in the former normal alignment of the lateral canthal ligament. A double-armed suture similar to the one placed in the lower lid anchors the upper half of the distal end of the new ligament into the prepared groove in the upper lid (figs. 2I and 2J). The suture is tied over a baby button or small rubber plate (fig. 2J). At this stage, the free end of the suture placed earlier to close the tarsoconjunctival layer is brought out through the skin flap at a point calculated to be somewhat inferior and lateral to the position of the new lateral canthal angle (fig. 2J). The lower half of the end of the new lateral canthal ligament is then attached to the tarsal flap and periosteum of the orbital margin by a buried mattress suture of 000 chromic catgut (fig. 2K).

Resurfacing of the newly constructed internal layer of the lower lid is facilitated by excising a small triangle of skin at the inferior, medial angle of the wound to create an advancement skin flap (fig. 2K). Closure is effected with interrupted 0000 silk sutures (fig. 2L). Finally, the free end of the continuous dermalon suture which is to be removed later from the tarsoconjunctival layer is tightened and locked on the surface of the skin flap.

A light pressure dressing is applied over a double layer of cilkloid.* The dressing is kept in place by a gauze head bandage. Too much pressure inhibits healing and causes damage to the tissues compressed between the dressing and the bony temporal margin of the orbit. Unless the patient complains of pain, the dressing may be left in position for five days. On the fifth postoperative day the dressing is removed and the double-armed sutures tied over buttons or rubber plates are removed. When these sutures are left in place longer than five days, necrosis of the underlying skin initiates an unnecessary spread of tissue destruction. The continuous, skin-locked dermalon suture is not disturbed at this time. If the wound is healthy, most of the interrupted silk skin sutures also may be removed. At the end of eight days the dressing is changed and the remaining skin sutures removed. At this time, the long, continuous dermalon suture is firmly locked and again should not be disturbed, since it creates little reaction and traction on it is painful. By the end of the third or fourth postoperative week the suture may be removed easily by gentle traction. If pain is encountered, removal of the suture may be postponed until anesthesia is given for the next stage of the procedure.

The healed wound appears as shown in figure 3M. The healed tarsorrhaphy is seen extending upward from the nude margin of the temporal portion of the lower lid and covering part of the cornea.

Although the presence of lashes over the temporal third of the lower lid is not especially important, a cilia graft from the brow improves the appearance of the new lid. In the customary method, a free graft of skin from the brow, about four hairs in width, is used as the donor tissue. Interrupted sutures of 000000 chromic catgut anchor the graft in the bed prepared for its reception along the margin of the healed skin flap.

The bed is prepared by making a horizontal "Capital I" incision at the proper

*Cilkloid.—A cellulose acetate membrane manufactured by the Cilkloid Co., Marshalltown, Iowa.

level (fig. 3N). The two small flaps thus created provide a covering for the raw edges of the cilia graft. The brow wound is closed by interrupted 0000 silk sutures. The lines of dissection and suturing are shown in figures 3N, 30 and 3P. A light pressure dressing is applied.

canthus is carefully sutured with 0000 silk sutures to inhibit any tendency of the lateral canthal angle to close (fig. 3R). Ointment is used freely and the sutures are left in place for a week. After the first twenty-four hours all dressings are eliminated.

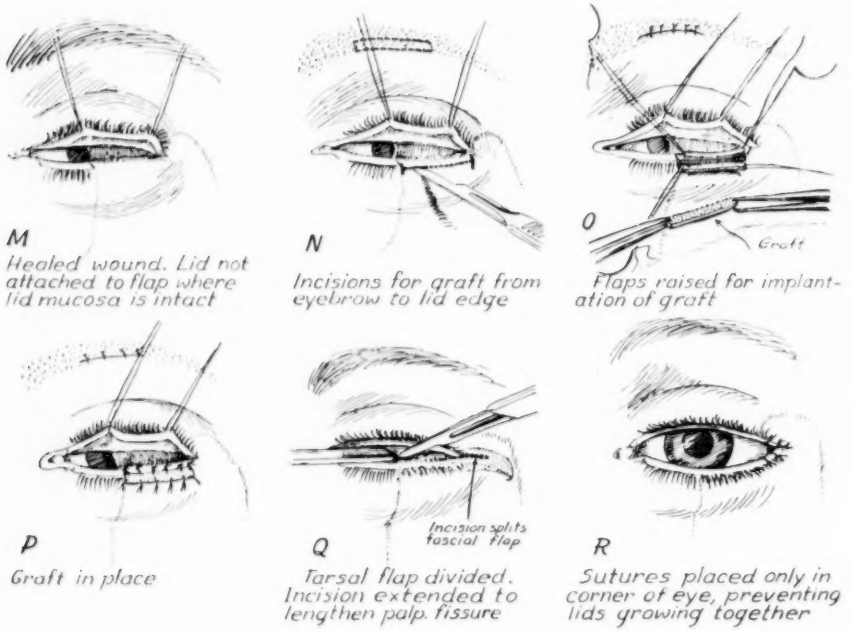
M
Healed wound. Lid not attached to flap where lid mucosa is intact
N
Incisions for graft from eyebrow to lid edge
O
Graft
Flaps raised for implantation of graft
P
Graft in place
Incision splits fascial flap
Q
Tarsal flap divided. Incision extended to lengthen palp. fissure
R
Sutures placed only in corner of eye, preventing lids growing together

FIGURE 3.

At the end of five days the sutures in the brow are removed; those in the graft extricate themselves spontaneously. After ten days a dressing is not required.

The third stage of the procedure is done after the cilia graft has been in place six weeks. A grooved director is placed within the conjunctival sac behind the interpalpebral adhesion (fig. 3Q), and a scalpel is employed to open the interpalpebral fissure to its proper length. The temporal extremity of the

Since neoplasms of the lateral canthus rarely occur, it is hardly likely that a large series of cases should arise from a single source. During the past two years this procedure has been employed by the author in four cases and has given satisfactory results. A description of the technic is presented to the profession in the hope that others may find it useful or perhaps add improvements to the method.

THE PLASTIC SURGERY OF MAJOR LID DEFECTS FOLLOWING MALIGNANCY

EDMUND B. SPAETH, M.D.
PHILADELPHIA, PA.

THE FIELD of ophthalmic plastic surgery is so immense that it would be quite impossible to consider anything but a small portion of the subject. Major defects alone are being considered at this time. The lesser defects are more frequent, but this difference in degree of severity is not necessarily reflected in a greater ease of treatment. The principles for treatment, however, are much better known. Lid marginal defects and deformities at the external canthal angle illustrate the lesser deformities.

A consideration of the major morbidities follows. The presentation of principles by case reports seems the best method available. Figure 1 is from Imre and illustrates the principles of a sliding flap correction. The technic applies largely to those conditions which do not involve the full thickness of the lid.

The next three figures illustrate the repair and reconstruction of a lower and an upper lid respectively in which partial destruction has occurred but where some normal lid tissue is still present. In figure 2 the conjunctiva was conserved, as one sees; also in figure 3, which is a case awaiting this technic. A of figure 2 is the original defect, and C is the completed result. B shows the patient with the lids in temporary tarsorrhaphy. After the original operation site was incised, the inferior conjunctiva was mobilized and then sutured to the posterior surface of the pedicle flap brought down, as in E, and then sutured in a tarsorrhaphy for later satisfactory healing, as in F. This technic is basic and can be adjusted to many various types of cases, and to either a pedicle flap or a preplaced free skin graft.

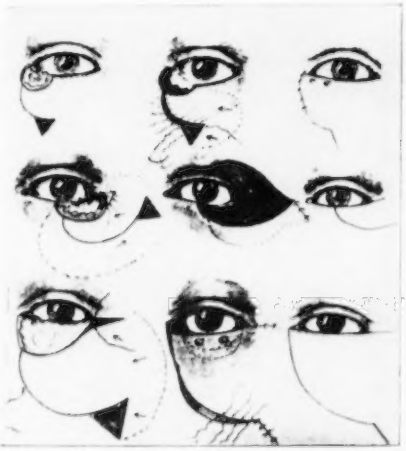

FIGURE 1.

Figure 4 is a case similar to that of figure 2, but it required reoperation because of a recurrence. As was to be expected, the recurrence did not appear in the original graft but beneath it. The lowest of the three pictures shows the patient at the time of his discharge from his final operation. A subconjunctival hemorrhage, postoperative but of no significance, is rather evident.

Figure 5 illustrates a technic for the correction of a subtotal loss of the upper lid. This is especially applicable to full

Presented at the Special Program on Plastic Surgery during the Fifty-Seventh Annual Session of the American Academy of Ophthalmology and Otolaryngology, Oct. 12-17, 1952, Chicago, Ill.

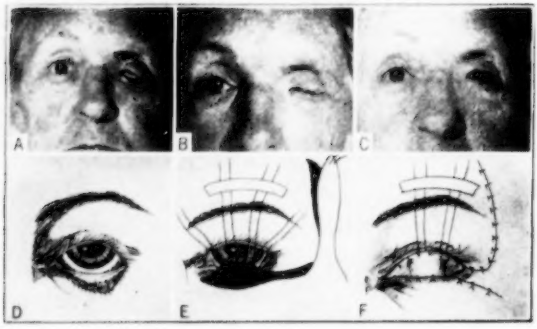

FIGURE 2.

FIGURE 3.

thickness defects; that is, where the conjunctiva, the tarsus, the orbicularis and the skin are all deficient. It shows the patient during the process of repair and reconstruction. The upper two photographs illustrate the original defect, with the left eye open and closed. Closure of the upper lid spreads the defect quite strikingly. The middle photographs are those during the necessary surgery; the lower two are photographs of the patient when surgery was completed, with his lids open and closed.

Figure 6 shows the technic used. A is a sketch of the original defect, B shows the scar resection and closure of this as much as is possible by sutures. At the same time a mucous membrane pocket was formed in the lower lid for the subsquent pedicle flap. This would transfer skin for the anterior surface of the defect and mucous membrane for the posterior surface of the flap. C illustrates the pedicle flap moved into the correcting position ten days after the mucous membrane graft. The defect in the lower lid was repaired with a simple full thickness graft of a size sufficient to cover that area where the mucous membrane graft has been adherent.

FIGURE 4.

FIGURE 5.

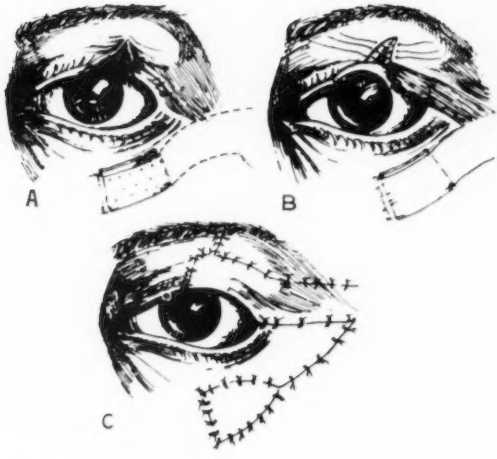

FIGURE 6.

FIGURE 7.

FIGURE 8.

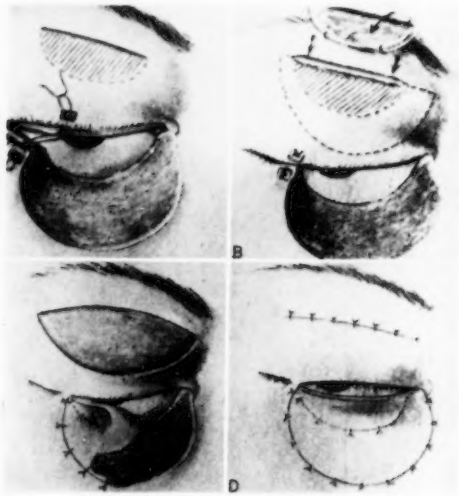

FIGURE 9.

FIGURE 10.

Figure 7 is a case of Cutler's loaned to me for inclusion. It is a clever utilization of the full thickness lower lid in the reconstruction of a portion of the upper lid. Historically, the basic principle is that of Landolt. (See figures 10 and 11.) In this instance a surgical anophthalmos preceded the necessity for the plastic surgery. Figure 8 is the end result.

Figure 9 is a case of Hughes' in which a combination of pregrafted mucous membrane with skin was transplanted from the upper to the lower lid for the correction of a postmalignancy defect there. It is a tremendously clever procedure, eminently successful, and has the common basic principles of that technic already described, that is, the mucous membrane with the pedicle flap.

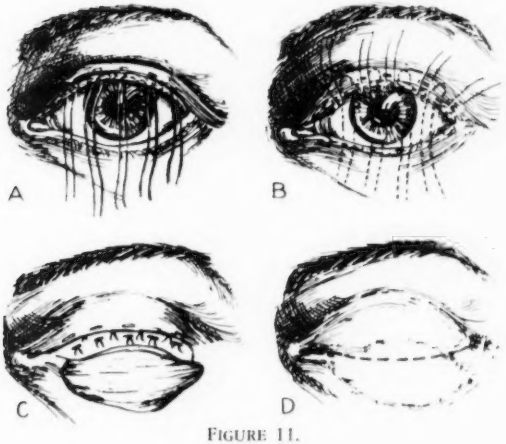

FIGURE 11.

FIGURE 12.

Figure 10 illustrates that remarkable technic first recommended and carried out by Landolt in 1881. A illustrates the case with a normal lower lid but with the entire upper lid removed. B is the case during treatment, and C illustrates the newly reconstructed upper lid. The position of the palpebral fissure and the ease with which the patient can now close his eyes and relieve himself from the terrible distress of an exposure keratitis are illustrated in A.

Figure 11 illustrates the technic. The lid margins of the lower lid have been entirely denuded and the lid separated into layers. The remnants of the upper lid also have been split into two layers: conjunctiva and tarsus, and skin and orbicularis. These two layers were thereafter sutured to each other in similar layers, separately, forming a curtain, as illustrated in C. The skin defect in C, which results from the upward movement of the lower lid margin, is grafted with a razor-cut graft. After complete healing a new palpebral fissure is formed by incision through the curtain. One may transplant lashes to this lid margin prior to the reopening of the palpebral fissure if thought necessary.

FIGURE 13.

Figure 12, following extensive x-ray therapy, is a similar case. In this both the upper and the lower lids needed reconstruction. The conditions before, during, and after surgery are rather well illustrated in the photographs. This also illustrates a completed eyebrow graft, obtained from the scalp.

Figure 13 is an orbital reconstruction following an orbital evisceration, made necessary because of malignancy. The lid skin surfaces, which originally had been forced into the orbit, were released and the socket grafted with razor-cut grafts. The defect in the upper lid, external canthal angle, as illustrated in figure 14, illustrates the usual residual defect so frequently pres-

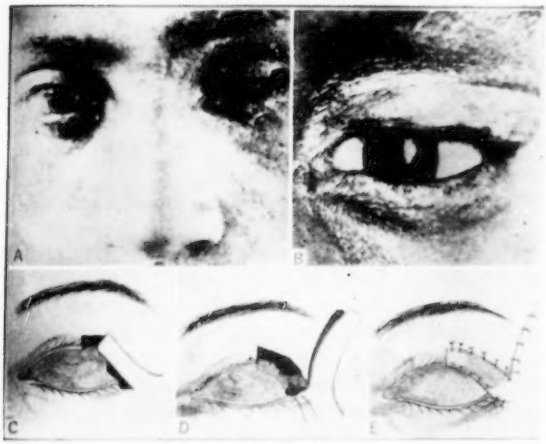

FIGURE 14.

FIGURE 15.

ent in these cases. It is to be repaired with pedicle flaps; one for the posterior surface, the other for the anterior surface, one folded over the other. B of these photographs illustrates the complete upper lid.

Figure 15 is a case in which the defects in the upper and the lower lids were so pronounced that more extensive surgery was necessary. In this a pedicle flap was lifted from the cheek. This had been lined previously with a free skin graft, in a pocket there, to form an anterior and a posterior surface for the flap. The flap was then transplanted into position and the new upper and lower lids formed from that. The end result is quite satisfactory.

In the handling of these cases the most important part of the therapy is almost certainly the planning necessary for, and peculiar to, each individual case. There is not much that is new in principle. In spite of that, every case which presents itself is a separate problem, and must be handled individually. With these major defects, careful planning is essential, but equally important is the necessity for boldness in execution of that technic planned.

In Memoriam

Alvin Behrens.....Brooklyn, New York
August 3, 1953

Royal Jackson Calcote.....Little Rock, Arkansas
June 28, 1953

Ernest Walton Clark, Jr.....Haddon Heights, New Jersey
April 24, 1953

Fay Maxey Cooper.....Oklahoma City, Oklahoma
June 16, 1953

Gerald Foster Denyes.....Delray Beach, Florida
June 22, 1953

Edward Francis Eagan.....Lynn, Massachusetts
June 13, 1953

Leighton Foster Johnson.....Boston, Massachusetts
July 21, 1953

Murray A. Last.....New York, New York
June 25, 1953

George James Taquino.....New Orleans, Louisiana
August 29, 1953

TRANSACTIONS

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Highlights of the Fifty-Eighth Annual Meeting

Interest in postgraduate teaching was again demonstrated at the Fifty-Eighth Annual Meeting of the Academy as 3,722 practicing ophthalmologists and otolaryngologists and 116 orthoptic technicians gathered in Chicago for lectures and demonstrations in clinical and other scientific fields pertaining to medicine. Others attracted to the meeting, including technical exhibitors and wives of Academy Fellows, raised the total registration to a record high of 5,552. A number of visitors, writers, helpers and lookers-on who came to observe the methods of instruction and education that have made the Academy the foremost extramural educational medical institution in the world helped to swell the crowds about the corridors and public rooms of the Palmer House during five days of intensive didactic instruction, forums, panel discussions, and committee meetings.

The comments heard on the last day of the convention bore only one expression, "the biggest and the best." Months and years of planning the scientific program and in the preparation of lectures for the instructional courses and the technical demonstrations in the scientific and trade exhibits were reflected in the quality of material presented and in the sustained interest manifested throughout the week.

At the opening session President Cordes placed in the records of the Academy the key to continuation of medical education in the specialties by defining the value of the certificate of the American Board of Ophthalmology, a theme with which he is thoroughly familiar and a subject to which he has given much thought. His discussion was limited to the Board with which he has worked for several years, but his evaluations are equally applicable to other specialty Boards.

The absence of the Guest of Honor, Dr. Lawrence T. Post, because of illness, was observed with deep regret, as his love for the Academy and what it stands for is deep in the minds of all who have known him and seen him in action. His address prepared especially

for this occasion as his foremost conviction regarding the present status and future prospects for the practice of medicine was read by his brother, Dr. Hayward Post, who shares his brother's views and his popularity. The Guest Speaker, Mr. Frank W. Law of London, captivated the audience with his charming manner and his most interesting address on "The Changing Face of Medicine."

The scientific sessions were highlighted by the presentation of planned symposia on which the authors had worked for two and three years. Some of these were planned by the Program Committee, others by affiliated groups such as the Otosclerosis Study Group, the Sub-Committee on Noise in Industry of the Committee on Conservation of Hearing, the Joint Committee on Industrial Ophthalmology, American Association of Orthoptic Technicians, the American Society of Ophthalmologic and Otolaryngologic Allergy, and the Committee on Plastic Surgery. The Teachers' Sections devoted an entire morning session to "Trends in Ophthalmic Teaching" and "Objectives in Undergraduate Teaching." The discussions were illuminating and undoubtedly will result in improvements in medical school and hospital teaching facilities.

The annual Jackson Memorial Lecture was given by Dr. Harold F. Falls, a scholarly address on "The Clinical Detection of the Carrier State in Ophthalmologic Pathology," in which he opened many a category for the placement of obscure and unclassified symptoms that have confused ophthalmologists since the days of Darwin.

Dr. George E. Shambaugh delivered the Wherry Memorial Lecture, "Some Contributions of Laboratory Research to the Development of Fenestration Surgery," a subject to which Dr. Shambaugh has made many notable contributions.

The premiere showing of an Academy sponsored motion picture, The Embryology of the Ear, was held Thursday evening in the Grand Ballroom. This project was begun in July 1952, a counterpart to The Embryology of the Eye, presented for the first time in October 1951. Part I, "The Inner Ear," is now completed. The completion of the entire picture, including the middle and external ear, will require several months of additional research.

The section on instruction provided more than seven hundred hours of didactic lectures by 350 instructors on clinical and fundamental subjects pertinent to ophthalmology and otolaryngology. Collected abstracts of the lectures in ophthalmology contain 701 pages, and in otolaryngology 500 pages, the last word in subjects covering the entire spectrum of these specialties.

The scientific exhibits were up to the high standards established years ago. Their value as teaching aids is incalculable. Awards in ophthalmology were: First Award, Helenor Campbell Wilder and Major John H. Bickerton (MC) (by invitation) for their exhibit on "Organisms Identified in Inflammatory Lesions of the Eyes in the Registry of Ophthalmic Pathology," Armed Forces Institute of Pathology, Washington, D. C.; Second Award, Dr. Arnold W. Forrest, Dr. Ira S. Jones and Dr. Raymond Pfeiffer of the Institute of Ophthalmology of the Presbyterian Hospital and Columbia University College of Physicians and Surgeons, New York, for "Tumors of the Lacrimal Gland"; Third Award, Dr. Walter H. Fink of Minneapolis for an exhibit summarizing present-day knowledge pertaining to "Vertical Oculomotor Problems." In otolaryngology the first award went to Dr. J. Dudley Singleton, Dr. Louis E. Adin, Jr., and Dr. Ralph S. Clayton (by invitation) of Southwestern Medical School of the University of Texas in

Dallas for their exhibit on "The Temporal Bone: An Anatomic and Clinical Study." Dr. Stanton A. Friedberg and Dr. Linden J. Wallner of the Department of Otolaryngology, University of Illinois College of Medicine, Chicago, Presbyterian Hospital, Chicago, and Veterans Administration Hospital at Hines, Illinois, received the second award for an exhibit dealing with "Selected Problems in the Diagnosis of Laryngeal Cancer." The third award was presented to Dr. Hans Von Leden of the Department of Otolaryngology, Northwestern University Medical School, Chicago, "Dissection in Continuity: The Commando Operation."

In recognition of distinguished services to the teaching program of the Academy, the Honor Key was presented to eleven Fellows: Drs. James B. Costen, A. Gerard DeVoe, J. Conrad Gemeroy, John F. Gipner, Harry N. Glick, Arthur L. Juers, Varaztad H. Kazanjian, William Howard Morrison, Frank W. Newell, Donald H. O'Rourke, and Harold G. Scheie.

Honorary fellowship was conferred upon Dr. Hallowell Davis, Professor of Physiology and Research Professor of Otolaryngology at St. Louis University School of Medicine and Director of Research, Central Institute for the Deaf, St. Louis; Dr. Stacy R. Guild, Director of the Otological Research Laboratory and Associate Professor at Johns Hopkins University School of Medicine, Baltimore; and Mr. Frank Law, Ophthalmic Surgeon, Guy's Hospital; Surgeon, Lecturer and Medical Officer-in-Charge of Physico-Therapy Department, Moorfields Eye Hospital; Examiner for Fellowship in Ophthalmology (England), Royal College of Surgeons and British Orthoptic Board.

Dr. Walter H. Theobald, Senior Attending Otolaryngologist at St. Luke's Hospital, Chicago, and Professor of Otolaryngology at the College of Medicine, University of Illinois, will become President of the Academy on January 1, 1954. Dr. Theobald became a Fellow in 1930 and served as First Vice-President in 1942. He has been a frequent contributor to the Instruction Courses and has given faithful service on a number of committees.

Dr. Algernon B. Reese, Clinical Professor of Ophthalmology, Columbia University College of Physicians and Surgeons, and a member of the Committee of Ophthalmology, Division of Medical Science, National Research Council, was named President-Elect of the Academy at the annual business meeting. From 1943 until 1951, Dr. Reese gave outstanding service to the Academy as Secretary for Ophthalmology. On January 1, 1953, he became a Senior Fellow, having been elected to membership in 1928.

Other newly elected officers are: Dr. Francis Heed Adler, Philadelphia, First Vice-President; Dr. Theodore Walsh, St. Louis, Second Vice-Presdient; Dr. Dohrmann Pischel, San Francisco, Third Vice-President; Dr. Samuel E. Roberts, Kansas City, Mo., Councillor; Dr. Lawrence R. Boies, Minneapolis, Secretary for Otolaryngology; Dr. Daniel Snydacker, Chicago, Secretary for Home Study Courses.

Officers who were re-elected are: Dr. W. L. Benedict, Rochester, Minn., Executive Secretary-Treasurer and Editor-in-Chief of the TRANSACTIONS; Dr. Kenneth L. Roper, Chicago, Secretary for Ophthalmology; Dr. A. D. Ruedemann, Detroit, Secretary for Instruction in Ophthalmology; Dr. Dean M. Lierle, Iowa City, Secretary for Instruction in Otolaryngology and Maxillofacial Surgery; and Dr. Erling W. Hansen, Minneapolis, Secretary for Public Relations.

The annual session in 1954 will be held September 19 to 24 in the Waldorf-Astoria Hotel, New York City.

Necrology

IN MEMORIAM

Henry Bacon Abbott, Geneva, N. Y.
Frank Mears Adams, Providence, R. I.
Ralph Almour, New York, N. Y.
Percy L. Balentine, Philadelphia, Pa.
Sylvester Judd Beach, Portland, Me.
Gordon Berry, Worcester, Mass.
Herbert Oscar Brust, Syracuse, N. Y.
Norman Wyvell Burritt, Summit, N. J.
Royal Jackson Calcote, Little Rock, Ark.
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George Hocken Thompson, Pittsfield, Mass.
Joshua Warren White, Norfolk, Va.
Eugene Emerson Willison, Merced, Calif.
Karl Christian Wold, St. Paul, Minn.

HENRY BACON ABBOTT

Dr. Henry Bacon Abbott of Geneva, New York, was born April 15, 1914, in Brooklyn. He received his degree in medicine from the University of Michigan Medical School in 1937 and did his postgraduate work at Long Island College Hospital in Brooklyn.

A specialist certified by the American Board of Ophthalmology, Dr. Abbott served as eye surgeon for the New York Central Railroad. He was ophthalmologist at Geneva General Hospital and consulting ophthalmologist at Clifton Springs Sanitarium, and at Barber Hospital in Lyons, New York.

Dr. Abbott was a Fellow of the American Academy of Ophthalmology and Otolaryngology, and of the American College of Surgeons. He also held membership in state and local medical societies.

Death occurred July 23, 1953.

FRANK MEARS ADAMS

Dr. Frank Mears Adams was born in New Haven, Connecticut, on January 20, 1881. In 1906 he received his degree in medicine from Yale University School of Medicine. His postgraduate work in otolaryngology was done under the direction of Dr. Harris Mosher of the Harvard University School of Medicine.

Dr. Adams was a specialist certified by the American Board of Otolaryngology. He was a Senior Fellow of the American Academy of Ophthalmology and Otolaryngology, a fellow of the American College of Surgeons, and a member of the American Laryngological, Rhinological and Otological Society and of the New England Otolaryngological Society.

At the time of his death, August 28, 1952, Dr. Adams was affiliated with Westerly (R. I.) Hospital, Butler Hospital, Charles V. Chapin Hospital and the Rhode Island Hospital in Providence, Rhode Island.

Dr. Adams is survived by his wife, Edith, and two children.

RALPH ALMOUR

Dr. Ralph Almour of New York City was born in Mantorville, Minnesota, June 21, 1897. He was a graduate of Columbia University College of Physicians and Surgeons, New York in 1919.

Dr. Almour was a specialist certified by the American Board of Otolaryngology. During World War II, he served as a lieutenant colonel in the Army Medical Corps in the European theater of operations. At the time of his death, March 27, 1953, he was professor of otolaryngology at the New York Polyclinic Medical School and Hospital.

Dr. Almour was a Senior Fellow of the American Academy of Ophthalmology and Otolaryngology and a fellow of the American College of Surgeons.

PERCY L. BALENTINE

Dr. Percy L. Balentine of Philadelphia, a Life Fellow of the American Academy of Ophthalmology and Otolaryngology, was born in 1871 and died on December 11, 1951. Dr. Balentine was a member of the Philadelphia County Medical Society and the American Medical Association.

SYLVESTER JUDD BEACH

Dr. S. Judd Beach was born on April 7, 1879 at Dedham, Massachusetts. He received the degree of Bachelor of Arts from Harvard College in 1901, and his medical degree from Harvard Medical School in 1905. He was the surgical house officer at Boston City Hospital from 1904 to 1906, House Physician of Boston Lying-In Hospital in 1906 and associated with the Massachusetts Eye and Ear Infirmary in 1907.

He practiced in Augusta, Maine from 1909 to 1920 and in Portland from 1920 until 1948 when he retired because of ill health. Dr. Beach died on February 10, 1953 at Cape Elizabeth, Maine.

A Life Fellow of the American Academy of Ophthalmology and Otolaryngology, Dr. Beach served as a member of the Council from 1932 to 1935. He was also a fellow of the American College of Surgeons, president of the New England Ophthalmological Society, chairman of the Section on Ophthalmology of the American Medical Association in 1939, as well as a member of the Maine State Department of Health from 1916 to 1924.

Dr. Beach was a member of the Council of the American Ophthalmological Society from 1936 to 1940, vice-president in 1943 and president in 1944. He was also a member of the Council of the Association for Research in Ophthalmology,

vice-president of the Foundation of Vision in 1944-1945, Cofounder of the Ophthalmological Study Council in 1945 and a member of its executive committee from 1945 to 1948. He was a lecturer of the Lancaster Course from 1945 to 1948. He was a member of the American Board of Ophthalmology from 1930 to 1948, serving as Secretary from 1944 to 1948. He was president of the Portland Medical Club in 1947.

A guest lecturer in graduate courses at George Washington, Virginia and Rochester universities, Dr. Beach was also on the staff of the Maine Eye and Ear Infirmary, and chief ophthalmologist at Portland City Hospital and Maine General Hospital. He was the founder of the Sight Savings Class of Portland. He was the author of "Principles of Refraction" and co-author with Dr. Conrad Berens of "The Eye and Its Diseases." Dr. Beach wrote numerous ophthalmological papers during his busy practice.

Dr. Beach is survived by his wife, Mrs. Louise Harris Beach and two children, a son, Edmund, and a daughter, Margaret.

GORDON BERRY

Dr. Gordon Berry of Worcester, Massachusetts, died on March 17, 1953 at the age of 73. He received his medical degree from the University of Michigan Department of Medicine and Surgery at Ann Arbor in 1906 and at one time was on the faculty of Harvard Medical School in Boston.

Dr. Berry was a specialist certified by the American Board of Otolaryngology and a Fellow of the American Academy of Ophthalmology and Otolaryngology, where he served on the committee on conservation of hearing. He was a member of the Advisory Committee on Audiometers and Hearing Aids of the Council on Physical Medicine and Rehabilitation of the American Medical Association. He was formerly a board member of the Volta Speech Association, a member and past president of the American Laryngological Association, member of the American Otological Society, the American Laryngological, Rhinological and Otological Society, the New England Oto-Laryngological Society and the American Broncho-Esophagological Association. From 1924 to 1927 he was president of the American Federation of Organizations for the Hard of Hearing. He was a founder of the Worcester Hearing League and honorary president since its inception.

In 1952, Dr. Berry received the degree of Doctor of Science from Amherst College. He was a member of the board of trustees for the Clark School for the Deaf in Northampton and in 1942 he was chairman of the board of trustees of Worcester Medical Library. He was affiliated with Hahnemann Hospital, Belmont Hospital, Fairlawn Hospital and Memorial Hospital.

HERBERT OSCAR BRUST

Dr. Herbert Oscar Brust of Syracuse, New York, died on April 30, 1953. A Life Fellow of the American Academy of Ophthalmology and Otolaryngology, he was born on March 8, 1872 at Troy, New York and received his early education at Lansingburg Academy and Union College. He was awarded his medical degree from Albany Medical College in 1897 and did postgraduate work at St. Peter's Hospital, Albany and at Post-Graduate Hospital in New York City. He began the practice of medicine in 1900 at Syracuse.

Dr. Brust was a member of the Onondaga County Medical Society, the Syracuse Academy of Medicine, the New York State Medical Association, and the American Medical Association. He was cofounder of the Crouse-Irving Hospital in Syracuse and was vice-president and member of its board of trustees until his death. He is survived by his wife, Mrs. Margaret Morrison Brust, a daughter, Mrs. Frederick C. Fox of Toledo and five grandchildren.

NORMAN WYVELL BURRITT

Dr. Norman Wyvell Burritt of Summit, New Jersey was born on March 31, 1893 at Bayonne, New Jersey and received his early education at Hamilton College and at Columbia University. His medical degree was obtained from University of Buffalo School of Medicine in 1921 and postgraduate studies were pursued at Philadelphia and New York. He began the practice of medicine at Summit, in 1923.

A Fellow of the American Academy of Ophthalmology and Otolaryngology, Dr. Burritt was a specialist certified by the

American Board of Otolaryngology. He was a member of the Union County Medical Society and its past president, of the American Medical Association, the Academy of Medicine of Northern New Jersey, and of the Summit Association of Scientists.

Dr. Burritt was affiliated with Overlook Hospital in Summit, Newark Eye and Ear Infirmary in Newark, Morristown Memorial Hospital and Shonhum Mountain Sanitorium in Morristown and Bonnie Burn Sanatorium in Scotch Plains, where he died on November 27, 1952.

ROYAL JACKSON CALCOTE

Dr. Royal Jackson Calcote, a Fellow of the Academy, was born at Ruston, Louisiana, on September 11, 1893. He was a graduate in medicine of the University of Arkansas School of Medicine in 1917 and did his postgraduate work in Vienna, Austria, and Berlin, Germany. In 1921 he began the practice of medicine in Little Rock, Arkansas, where he continued to practice until his death, June 28, 1953.

Dr. Calcote was clinical professor of surgery (ophthalmology) at his alma mater. He served as consultant at the Arkansas School for the Blind, and was affiliated with St. Vincent's Infirmary, Arkansas Baptist and Missouri Pacific Hospitals, and the Veterans Administration Hospital at Fort Roots.

Dr. Calcote served in both World Wars and was discharged as a captain at the end of World War II.

Surviving Dr. Calcote are his wife and two sons.

SOLOMON JEFFERSON CHAPMAN

Dr. S. Jefferson Chapman was born in Brownsville, Tennessee, in 1893. He was graduated from the Vanderbilt University School of Medicine at Nashville in 1916 and did his postgraduate work at St. Luke's Hospital, New York City. Until he retired in 1951 he engaged in the practice of medicine in Colorado Springs, Colorado, where he was affiliated with Memorial Hospital, Glocker-Penrose Hospital, and Cragmor Sanitorium.

Dr. Chapman was a specialist certified by the American Board of Otolaryngology in 1925. He was a Senior Fellow of the American Academy of Ophthalmology and Otolaryngology, a fellow of the American College of Surgeons, and a member of the Colorado State Medical Society.

Dr. Chapman died in Brownsville, Tennessee, December 29, 1952.

E. FRANK CHASE

Dr. E. Frank Chase of Seattle, Washington, was born in Greeley, Iowa, in 1878. He received his medical degree from the University of Minnesota College of Medicine and Surgery in 1905 and was a specialist certified by the American Board of Otolaryngology. He was associated with the Mayo Clinic from 1914 until 1918, when he moved to Seattle.

A Fellow in the American Academy of Ophthalmology and Otolaryngology, Dr. Chase was also a fellow of the American College of Surgeons and a member of the Pacific Coast Oto-Ophthalmological Society. He was affiliated with Children's Orthopedic and Providence Hospitals.

Dr. Chase died on August 4, 1953, at the age of 73. He is survived by his wife, Mrs. Amy K. Chase; two daughters, Mrs. Frances Ripley of Palm Springs, California, and Mrs. Valen Farrens, of Portland, Oregon; and four grandchildren.

ERNEST WALTON CLARK, JR.

Dr. Ernest Walton Clark, Jr., of Haddon Heights, New Jersey, died in Philadelphia on April 24, 1953, aged 56 years.

Dr. Clark, who was a native of North Carolina, received his degree in medicine from the University of Pennsylvania School of Medicine in Philadelphia in 1922. He was a specialist certified by the American Board of Otolaryngology. He was affiliated with Cooper Hospital in Camden and Wills Hospital in Philadelphia.

Dr. Clark was a Fellow of the American Academy of Ophthalmology and Otolaryngology.

BENTON NOBLE COLVER

Dr. Benton Noble Colver of Los Angeles, California, was born in Wellington, Ohio, June 3, 1880. He received his undergraduate education at Albion College in Michigan, and received degrees in medicine from American Medical Missionary

College (1904) and from University of Pennsylvania School of Medicine (1911). He was a specialist certified by the American Board of Otolaryngology in 1925.

Dr. Colver was professor of otolaryngology at the College of Medical Evangelists, Loma Linda-Los Angeles, and was affiliated with White Memorial Hospital in Los Angeles and the Glendale Sanitarium and Hospital.

Among other affiliations Dr. Colver was a Life Fellow in the American Academy of Ophthalmology and Otolaryngology. He was a fellow of the American College of Surgeons and a member of the American Laryngological, Rhinological and Otological Society and of the Pacific Coast Oto-Ophthalmological Society.

Dr. Colver died March 14, 1953.

FAY MAXEY COOPER

Dr. Fay Maxey Cooper of Oklahoma City was born in Ozark, Arkansas, November 27, 1899. He received his degree in medicine from University of Arkansas School of Medicine in 1925. Postgraduate work in ophthalmology was done at Tulane University of Louisiana during the next two years.

A specialist certified by the American Board of Ophthalmology, Dr. Cooper was clinical professor of ophthalmology at University of Oklahoma School of Medicine, and was affiliated with St. Anthony, University, McBride and Wesley hospitals.

Dr. Cooper was a Fellow of the American Academy of Ophthalmology and Otolaryngology. He was a past president of the Oklahoma Clinical Society, and a member of state and local medical associations.

Dr. Cooper died June 16, 1953.

ELIJAH ROCKHOLD CROSSLEY

Dr. Elijah Rockhold Crossley, a Life Fellow of the American Academy of Ophthalmology and Otolaryngology, died in Chicago, January 23, 1953, aged 83 years.

Dr. Crossley was a graduate of Northwestern University Medical School, Chicago, in 1902, and formerly served on the faculty of his alma mater. For many years he was affiliated with Illinois Eye and Ear Infirmary.

THOMAS CARROLL DAVIS

Dr. Thomas Carroll Davis of Philadelphia was born May 11, 1881. He received his preliminary education at State Teachers College, Millersville, Pennsylvania, and his medical degree from Jefferson Medical College of Philadelphia in 1909. He also received a degree in pharmacy from the Philadelphia College of Pharmacy and Science.

Dr. Davis began the practice of medicine in 1910, served as clinical professor of laryngology and rhinology at Temple University School of Medicine from 1915 to 1918, and as associate professor from 1915 to 1930. He was a specialist certified by the American Board of Otolaryngology and a Fellow of the American Academy of Opthalmology and Otolaryngology and of the American College of Surgeons. He was a member of the Philadelphia County Medical Society and the Philadelphia Laryngological Society.

Dr. Davis died on March 5, 1953, at Temple University Hospital, with which he was affiliated.

Dr. Davis is survived by his wife, Mrs. Julia S. A. Davis, and two sons, Reverend Bradford Davis and Dr. Clayton Davis.

WILLIAM CARLE DAVIS

Dr. William Carle Davis, who was born in Frankfort, Indiana, in 1875, died in Columbus, Ohio, on March 8, 1953, aged 78 years. He had received his degree in medicine from the Medical College of Ohio in Cincinnati in 1896.

Dr. Davis had retired a number of years ago, but he was formerly affiliated with Grant and Children's hospitals in Columbus. He was a specialist certified by the American Board of Ophthalmology, and a Fellow of the American Academy of Ophthalmology and Otolaryngology and of the American College of Surgeons.

GERALD FOSTER DENYES

Dr. Gerald Foster Denyes was born at Odessa, Ontario, Canada. He received his medical education from Queen's University Faculty of Medicine, Kingston, Ontario, from which he was graduated in 1916. Postgraduate work was done at New York Postgraduate Hospital and in Budapest, Hungary, and Vienna, Austria.

Dr. Denyes was a specialist certified by the American Board of Otolaryngol-

ogy. For many years he practiced his specialty in Toledo, Ohio, where he served on the staffs of Toledo and Mercy hospitals and was consulting staff member of Flower Hospital.

During World War I he served with the Canadian Army in Egypt.

Dr. Denyes retired to Delray Beach, Florida, in 1952. He died in West Palm Beach, Florida, June 22, 1953. Surviving him are his wife, Alice, and a son, Michael, both of Delray Beach, Florida, and a daughter, Arliss, of Tallahassee, Florida.

CLYDE PERCY DYER

Dr. Clyde Percy Dyer of St. Louis was born May 15, 1884, in Moundville, Missouri. He received his preliminary education in Joplin, Missouri, and the degree of Bachelor of Arts from the University of Missouri in 1909. In 1911 he took his medical degree from Washington University School of Medicine, serving as an intern at St. Louis City Hospital from 1911 to 1912 and as resident assistant from 1912 to 1913. He also studied at Vienna under Professor Ernst Fuchs.

Dr. Dyer began the practice of medicine in 1913 at St. Louis. During World War I he was a first lieutenent in the medical corps of the army, teaching at the school of ophthalmology, Camp Greenleaf, Georgia. He has also taught at the Washington University School of Medicine Eye Clinic, and was on the staff of the St. Louis County and Evangelical Deaconess hospitals.

A specialist certified by the American Board of Ophthalmology, Dr. Dyer was a Life Fellow of the American Academy of Ophthalmology and Otolaryngology. He was a member of the American Medical Association, of the Mississippi Valley Medical Society, of the Southern Medical Association, of the American Association of Railway Surgeons, and past president of the St. Louis County Medical Association and the American Medical Writers' Association. Dr. Dyer was active in the American Legion, the Rotary Club, the Missouri Society Sons of the American Revolution, and the Masonic lodge.

Dr. Dyer is survived by his wife, Mrs. Gladys Noxon Dyer, a son, John Elwin Dyer, and a daughter, Mrs. Robert E. Vanek, as well as two grandchildren.

EDWARD FRANCIS EAGAN

Dr. Edward Francis Eagan was born in Lynn, Massachusetts, September 11, 1905. His preliminary education was received in Lynn, and he received his degree in medicine from Yale University School of Medicine in 1930. He did his postgraduate work at the the University of Indiana College of Medicine and the University of Illinois College of Medicine, and began the practice of his specialty in Lynn in 1934. At the time of his death, June 13, 1953, he was affiliated with Lynn and Union hospitals in Lynn and the Carney Hospital in Boston.

Dr. Eagan was a specialist certified by the American Board of Otolaryngology. He was a Fellow of the American Academy of Ophthalmology and Otolaryngology, was a diplomate of the National Board of Medical Examiners, and held membership in the Lynn Medical Fraternity and in state and national medical associations. Dr. Eagan also held membership in many civic and philanthropic organizations.

Surviving Dr. Eagan are his wife, Mrs. Mary Bohan Eagan, and five children, Mary Jane, Judith Ann, Edward Francis, Deborah Margaret, and Michael Martin. He also leaves his mother, Mrs. Mary Gertrude Eagan.

CLARENCE E. EARNEST

Dr. Clarence E. Earnest of Pueblo, Colorado, died November 16, 1952, at the age of 65. Dr. Earnest was born December 26, 1886, at Moulton, Iowa, and received his medical degree from the University of Kansas School of Medicine, Lawrence, in 1914. He also did postgraduate work at the University of Edinburgh in Scotland. He began the practice of medicine in 1914 at Kansas City, Missouri.

A specialist certified by the American Board of Otolaryngology, Dr. Earnest was a Fellow of the American Academy of Ophthalmology and Otolaryngology and of the American College of Surgeons. He was affiliated with Kansas City General Hospital in Kansas City, Missouri, Clay Center Municipal Hospital, Clay Center, Kansas, Laramie County Hospital, Fort Collins, Colorado; Corwin,

Parkview and St. Mary hospitals, Pueblo, Colorado.

Dr. Earnest was a member of the Pueblo County Medical Society and the Jackson County Medical Society of Kansas City, Missouri.

His wife, Mrs. Margaret I. Earnest, and a son, Robert C. Earnest, survive.

RICHARD EDISON ESTLICK

Dr. Richard Edison Estlick was born December 9, 1910, in Troy Township, Whitley County, Indiana, and died April 6, 1952, at Fort Wayne. He was graduated from Columbia City High School in 1929, and received the degree of Bachelor of Science from Indiana University and the medical degree from Indiana University School of Medicine in 1935. He began the practice of medicine in 1936 in Millersburg, Indiana.

A specialist certified by the American Board of Otolaryngology, Dr. Estlick was a Fellow of the American Academy of Ophthalmology and Otolaryngology and of the American College of Surgeons. He was a member of the American Medical Association, of the Pan-American Association of Oto-Rhino-Laryngology and Broncho-Esophagology, the American Otorhinologic Society on Plastic Surgery, the Fort Wayne Academy of Medicine and the Allen County Medical Society.

Dr. Estlick was an instructor in head and neck surgery at the Indiana University School of Medicine, and was on the staff of the Lutheran and Methodist hospitals of Fort Wayne. He served in the Air Force from 1942 to 1946.

He is survived by his wife, Mrs. Edith Estlick, a son, Charles, a daughter, Judith, and his mother, Mrs. Charles E. Estlick.

AMBROSE EASTIN EUBANK

Dr. Ambrose Eastin Eubank of Independence, Missouri was born in Winchester, Kentucky, April 8, 1878. He received his degree in medicine from the University Medical College of Kansas City in 1901, and began the practice of medicine in Kansas City, Missouri, the following year. He did postgraduate work at the University of Chicago, Harvard University, Roosevelt Hospital in New York, and in Vienna and Budapest. He was a specialist certified by the American Board of Otolaryngology in 1926.

Dr. Eubank was on the Clinic Staff of Alfred Benjamin, St. Mary's and General hospitals in Kansas City, as well as on the visiting staff at Menorah Hospital.

Dr. Eubank was a Fellow of the American Academy of Ophthalmology and Otolaryngology. He was a past president of the Kansas City Society of O. O. R. L. and of the Jackson County Medical Society, which in 1946 presented him with the gold key for his services to the Society. He was also a member of Kansas City Southwest Clinical Society and of state and national medical associations.

Dr. Eubank died in Kansas City on February 23, 1953. He is survived by his wife, Mrs. Dorothy Smiley Eubank, and a son, Mahlon, both of Kansas City, and a daughter, Dr. Miriam Eubank-Jones of Evanston, Illinois, also a Fellow of the Academy.

JOHN NORRIS EVANS

Dr. John Norris Evans, who was born in Brooklyn, New York, in 1891, died in his native city on April 9, 1953.

Dr. Evans received his degree in medicine from Long Island College Hospital in 1916. At the time of his death he was professor emeritus of ophthalmology at the State University of New York College of Medicine, which was formerly known as the Long Island College of Medicine, where he taught for many years.

During World War I, Dr. Evans was a contract surgeon for the Army. He was author of "Clinical Scotometry," associate editor of **Quarterly Review of Ophthalmology**, consultant ophthalmologist to the Ophthalmological Foundation, and an affiliate of Brooklyn Eye & Ear Hospital, Long Island College Hospital and Brooklyn Hospital.

Dr. Evans was a Senior Fellow of the American Academy of Ophthalmology and Otolaryngology. He was a member of the American Ophthalmological Society and the Association for Research in Ophthalmology, and a fellow of the American College of Surgeons.

NOAH FOX

Dr. Noah Fox, who was born in Greenview, Illinois, in 1895, died in Chicago, April 9, 1953.

Dr. Fox was a graduate of Rush Medical College, Chicago, 1923, did his

postgraduate work at Cook County Hospital, and was certified by the American Board of Otolaryngology in 1928. At the time of his death he was clinical assistant professor of otolaryngology at University of Illinois College of Medicine. He was on the staffs of the Mother Cabrini Memorial, the Illinois Central, and the Jackson Park hospitals.

Dr. Fox was a Senior Fellow of the American Academy of Ophthalmology and Otolaryngology. He was a fellow of th American College of Surgeons, and of the American College of Allergists.

GOODLATTE BROWNE GILMORE

Dr. Goodlatte Browne Gilmore of New York City died on November 19, 1952. He was born in Washington, D. C., September 3, 1893, and received his medical degree from the University of Virginia Department of Medicine at Charlottesville in 1917.

A specialist certified by the American Board of Otolaryngology, Dr. Gilmore was a Fellow of the American Academy of Ophthalmology and Otolaryngology and of the American College of Surgeons. He was a member of the American Laryngological, Rhinological and Otological Society and for many years served as secretary of the Bronx County Medical Society.

He was affiliated with Bronx Eye and Ear Infirmary, St. Barnabas Hospital for Chronic Diseases, and Morrisania and Seton hospitals, and was a consultant at Union Hospital.

MORRIS ARTHUR GLATT

Dr. Morris Arthur Glatt died on July 19, 1953, in Beverly Hills, California. He was born in Russia in 1890, and received the degree of Doctor of Medicine from Loyola University School of Medicine in Chicago in 1917. He practiced medicine in Chicago for nearly fifty years and only moved to California in 1949. While in Chicago he was on the faculty of his alma mater as associate professor of otolaryngology, was on the staff of the Illinois Eye and Ear Infirmary, and was affiliated with Mount Sinai, Norwegian-American, American and Garfield Park Community hospitals.

A Fellow of the American Academy of Ophthalmology and Otolaryngology, Dr. Glatt was a specialist certified by the American Board of Otolaryngology. At the time of his death he was associate clinical professor of otolaryngology at the College of Medical Evangelists.

LEWIS PELLMAN GLOVER

Dr. Lewis Pellman Glover, who was born in Altoona, Pennsylvania, May 26, 1900, died in the city of his birth on April 22, 1953.

Dr. Glover received his degree in medicine from Jefferson Medical College of Philadelphia in 1926 and did his postgraduate work in ophthalmology at Wills Hospital in Philadelphia. He was a specialist certified by the American Board of Ophthalmology, and had practiced his specialty in Altoona for the past twenty-three years. He was chairman of the department of ophthalmology at Altoona Hospital.

Dr. Glover was a Fellow of the American Academy of Ophthalmology and Otolaryngology, and of the American College of Surgeons.

ROY HAMPTON GOUGH

Dr. Roy Hampton Gough of Fort Worth, Texas, died on December 26, 1951. He was born on November 22, 1875 in Sulphur Springs, Texas, and received some of his college education at East Texas Normal College, Commerce, receiving a Bachelor of Arts degree from Texas Christian University in 1906. His medical degree was acquired in 1901 from Barnes Medical College, St. Louis, Missouri, and later he took postgraduate courses in Vienna, Edinburgh, Chicago, Boston, New York and New Orleans. Dr. Gough also completed work for a master of arts degree at Texas Christian University in 1918.

Dr. Gough practiced medicine in Hereford, Dallas and Hillsboro before going to Fort Worth in 1913, where he continued practice until his death. He was closely associated with Texas Christian University, serving as a member of the board of directors and the executive committee from 1911 to 1916, and was elected to life membership on the university's advisory board in 1916.

A Fellow of the American Academy of Ophthalmology and Otolaryngology and the American College of Surgeons,

a member of the Texas Society of Ophthalmology and Otolaryngology, Texas Medical Association, and Fort Worth Eye, Ear, Nose and Throat Society, Dr. Gough was a specialist certified by both the American Board of Ophthalmology and the American Board of Otolaryngology. He served during World War I.

Dr. Gough is survived by his wife, Mrs. Vera Minerd Gough, and one daughter, Mrs. Wilbert Combs.

HENRY LYTLE GOWENS, JR.

Dr. Henry Lytle Gowens, Jr., died in Philadelphia on January 2, 1953. He was born September 1, 1884, and received his medical degree from Hahnemann Medical College and Hospital of Philadelphia in 1908.

A Fellow of the American Academy of Ophthalmology and Otolaryngology, Dr. Gowens was a specialist certified by the American Board of Ophthalmology. He was a life member of the Philadelphia County Medical Society, and a fellow of both the American College and International College of Surgeons.

He was affiliated with Philadelphia General and Mercy-Douglas hospitals.

Dr. Gowens is survived by his wife, Mrs. Eula Walton Gowens, a brother, Willard, and a sister, Mrs. Virgie Warfield.

PAUL B. GROGIN

Dr. Paul B. Grogin of Pittsburgh was born in 1888. He was a specialist certified by the American Board of Otolaryngology and had received his medical degree from the University of Pittsburgh School of Medicine in 1911. Dr. Grogin died in the early part of 1953.

FREDERICK MAXIMILIAN GROSSMAN

Dr. Frederick Maximilian Grossman was born December 29, 1903, in Vienna, Austria, and died May 12, 1953, in Seattle, Washington. Dr. Grossman received his medical education in Czechoslovakia, obtaining the degree of Doctor of Medicine from Masaryk University at Brno. From 1929 to 1937 he served as a staff member of the University Hospital for Ear, Nose and Throat Diseases in Vienna.

Dr. Grossman began his practice in America in New York City in 1939. He was a Fellow of the American Academy of Ophthalmology and Otolaryngology and of the New York Academy of Medicine, and a member of the American Medical Association, King County Medical Association, Acoustical Society of America, and the French National Society for Ear, Nose and Throat Diseases.

A number of papers dealing with hearing aids were written and published by Dr. Grossman.

Dr. Grossman is survived by his wife, Mrs. Lisel Salzer Grossman.

CHARLES HERNDON HARALSON

Dr. Charles Herndon Haralson of Tulsa, Oklahoma, died on October 29, 1952. A Fellow of the American Academy of Ophthalmology and Otolaryngology, Dr. Haralson received the degree of Doctor of Medicine from Emory University School of Medicine, Atlanta, Georgia, in 1914. He was a specialist certified by the American Board of Ophthalmology and a fellow of the American College of Surgeons.

Dr. Haralson began his practice in Tulsa in 1919 after serving in the Army Medical Corps during World War I. He was formerly chief of staff at St. John's Hospital and president of the Tulsa County Medical Society.

Surviving are his wife, Mrs. Gretchen Prescott Haralson, a son, Dr. Prescott Herndon Haralson, two daughters, Mrs. Alec A. Johnson of Cincinnati, and Mrs. T. R. Trautmann of Tulsa, as well as two grandchildren.

JOHN FRANK HARDESTY

Dr. John Frank Hardesty of St. Louis was born in Winfield, Missouri, on December 31, 1887, and received the degree of Doctor of Medicine from St. Louis University School of Medicine in 1914, having received the degree of Bachelor of Science in Medicine also in 1914. He interned at St. Louis City Hospital from 1914 to 1916. He served during World War I in the Army Medical Corps for twenty months and was always active in veterans affairs.

After World War I he began the practice of ophthalmology with Dr. William H. Luedde in St. Louis. He was visiting ophthalmologist at St. Louis City Sanitarium since 1921, and since 1934 had been associate professor of ophthalmol-

ogy at the St. Louis University School of Medicine. He had been acting chairman of the Department of Ophthalmology of his alma mater since 1950. He was affiliated with St. Mary's Group of Hospitals, Missouri Baptist Sanitarium and Bethesda General Hospital.

A Life Fellow of the American Academy of Ophthalmology and Otolaryngology, and a fellow of the American College of Surgeons, Dr. Hardesty was a specialist certified by the American Board of Ophthalmology. He was a member of the American Medical Association, the Southern Medical Association, the American Ophthalmological Society, the Missouri State Medical Association, the St. Louis Medical Society, the St. Louis Ophthalmological Society, and the Association for Research in Ophthalmology. He was formerly medical director of St. Louis Society for the Blind.

Dr. Hardesty died on June 20, 1953. Surviving are his wife, Mrs. Lena Lou Hardesty, a daughter, Jane, two sons, John and Robert.

MARY KATHRINA HEARD

Dr. Mary Kathrina Heard, a Life Fellow of the American Academy of Ophthalmology and Otolaryngology, was born September 17, 1869, at Flushing, Michigan. She received her early education in Michigan, obtaining a degree in pharmacy from the University of Michigan in 1892. In 1905 she received her medical degree from the State University of Iowa College of Medicine in Iowa City, and in 1907 her degree of Master of Science also from State University of Iowa College of Medicine.

For several years Dr. Heard taught at her alma mater and also was engaged in private practice in Iowa City. She was interested in public health work and was a life member of the American Red Cross.

Dr. Heard died on April 20, 1953 at St. Petersburg, Florida, at the age of 83. She is survived by two nieces, Mrs. George Smart of Greenwich, Connecticut, and Mrs. George Book of Harborcreek, Pennsylvania, and three nephews, Louis F. Heard of Manchester, Connecticut, Ralph Heard of Erie, Pennsylvania, and Randolph Heard of Slippery Rock, Pennsylvania.

HOWARD MILLER HEBBLE

Dr. Howard Miller Hebble of Moorestown, New Jersey, was born December 7, 1909, in Enon, Ohio. He received his degree in medicine from Jefferson Medical College of Philadelphia in 1934 and did his postgraduate work in otolaryngology at University of Pennsylvania School of Medicine.

A specialist certified by the American Board of Otolaryngology, Dr. Hebble served as a lieutenant commander in the U. S. Army Medical Corps during World War II. At the time of his death on November 21, 1952, he was affiliated with Zurbrugg Memorial Hospital in Riverside, Burlington County Hospital in Mount Holly, and Children's Hospital and Pennsylvania Hospital in Philadelphia.

Dr. Hebble was a Fellow of the American Academy of Ophthalmology and Otolaryngology, and a member of state and local medical societies.

FREDERICK JOHN HOITASH

Dr. Frederick John Hoitash of Huntington, West Virginia, died on November 29, 1952, at the age of 69. Dr. Hoitash was born in Czechoslovakia and received his medical degree from Medizinische Fakultat der Universitat, Vienna, Austria, in 1910.

Dr. Hoitash served as a Captain in the Austrian Army Medical Corps from 1914 to 1918. He came to the United States in 1923. He took three years of postgraduate work in ophthalmology at the Fuchs Eye Clinic in Vienna.

A specialist certified by the American Board of Ophthalmology, Dr. Hoitash was a Fellow of the American Academy of Ophthalmology and Otolaryngology, a member of the West Virginia Academy of Ophthalmology and Otolaryngology, and the Cabell County Medical Society.

Dr. Hoitash is survived by his wife, Mrs. Mary Hoitash, and a son, Charles.

WILL WANEE HOLMES

Dr. Will W. Holmes of Logansport, Indiana, was born in Fairland, Indiana, September 8, 1888. He received his degree in medicine from Indiana University School of Medicine, Indianapolis, in 1913, and was a specialist certified by the American Board of Otolaryngology.

Dr. Holmes was a colonel in the U. S. Army Medical Corps in World War II and also saw service in the first World War. At the time of his death on April 28, 1953, he was affiliated with St. Joseph Hospital and the Memorial Hospital in Logansport, where he had practiced his specialty for many years.

Dr. Holmes was a Fellow of the American Academy of Ophthalmology and Otolaryngology. He was a past president of the Eleventh Indiana Councilor District Medical Association and president-elect of the Indiana Academy of Ophthalmology and Otolaryngology.

DAVID IDE

Dr. David Ide, who was born in Russia, June 15, 1897, died in New York City on July 17, 1952.

Dr. Ide was a graduate of University and Bellevue Hospital Medical College, New York, 1920, and did postgraduate work in bronchoscopy in Philadelphia, under Dr. Chevalier Jackson, and in Vienna, Austria. He was certified by the American Board of Otolaryngology in 1939.

Since 1922, Dr. Ide has practiced in New York City. At the time of his death he was affiliated with New York City, Jewish Memorial, and Lebanon hospitals. He was Honorary Police Surgeon for the Police Department of New York City.

Dr. Ide was a Fellow of the American Academy of Ophthalmology and Otolaryngology, of the International College of Surgeons, and of the American College of Surgeons. He found relaxation in painting landscapes and still life, and has won many medals and prizes for his art.

Surviving Dr. Ide is his wife, Elynor, and two daughters, Mrs. Alma Cohn and Hope Ide.

DAVID MORRISON JOHNSON

Dr. David Morrison Johnson was born December 31, 1899, in Cumberland, Maryland. He received his degree in medicine from Jefferson Medical College of Philadelphia in 1922. He began the practice of his specialty in Columbus, Ohio, in 1923, and he was affiliated with Children's Hospital and Grant Hospital in Columbus at the time of his death, May 14, 1953.

Dr. Johnson was a specialist certified by the American Board of Otolaryngology. He was a Fellow of the American Academy of Ophthalmology and Otolaryngology, and a member of the Columbus Academy of Medicine and of state and national medical associations. During World War II he served as Commander in the U. S. Naval Medical Corps in the Pacific Zone.

Dr. Johnson is survived by his wife, Josephine, and two sons.

LEIGHTON FOSTER JOHNSON

Dr. Leighton Foster Johnson of Boston was born in Hingham, Massachusetts, November 30, 1890. He received his undergraduate education at Syracuse University College of Liberal Arts, and was granted the degree of Doctor of Medicine by Boston University Medical School in 1915. His postgraduate work in otolaryngology was done at Harvard University School of Medicine.

A specialist certified by the American Board of Otolaryngology, Dr. Johnson was professor of otolaryngology at Boston University Medical School at the time of his death, July 21, 1953. He was also chief of otolaryngological service at Massachusetts Memorial Hospitals; consultant in otolaryngology at Norwood Hospital, Westboro State Hospital and Massachusetts Hospital School in Canton, Massachusetts; and consultant in laryngology at Cape Cod Hospital, Hyannis, Martha's Vineyard Hospital in Oak Bluffs, and Burbank Hospital in Fitchburg.

Dr. Johnson was a Fellow of the American Academy of Ophthalmology and Otolaryngology and of the American College of Surgeons. He was also a member of the American Laryngological, Rhinological and Otological Society, the New England Otolaryngological Society, and the American Broncho-Esophagological Association. In 1923 he was president of the Norfolk Medical Society.

JAMES GILLIAM JOHNSTON

Dr. James Gilliam Johnston of Charlotte, North Carolina, was born April 17, 1872, in Newberry County, South Carolina. He received his degree in medicine from Vanderbilt University School of Medicine in 1899.

Dr. Johnson was a specialist certified by the American Board of Ophthalmology and had been affiliated with Char-

lotte Memorial, Presbyterian, and Mercy hospitals in Charlotte. He was a Fellow of the American Academy of Ophthalmology and Otolaryngology and of the American College of Surgeons, as well as a member of state and local medical societies.

Dr. Johnston died in Charlotte on October 6, 1952.

ELGIN WILBUR JONES

Dr. Elgin Wilbur Jones was born January 12, 1861 at Newmarket, New Hampshire, and died August 22, 1952 in Reading, Massachusetts. Dr. Jones received his preliminary education at Tilton Academy, Tilton, New Hampshire, and his medical degree from New York University Medical College in 1883. He began the practice of medicine in 1885 in Meredith, New Hampshire.

A Life Fellow of the American Academy of Ophthalmology and Otolaryngology, Dr. Jones was on the staff of Lynn Hospital, Lynn, Massachusetts, and practiced in Lynn for nearly fifty years. He was a member of the New England Ophthalmological Society and the Massachusetts Medical Society.

Dr. Jones is survived by two sons, Ashley S. and William E.

FREDERICK ANDREWS KIEHLE

Dr. Frederick A. Kiehle of Palo Alto, California, died March 22, 1953, at the age of 80. Dr. Kiehle was a specialist certified by both the American Board of Ophthalmology and the American Board of Otolaryngology, and he was a Life Fellow of the American Academy of Ophthalmology and Otolaryngology.

Dr. Kiehle had received his medical degree from the University of Minnesota College of Medicine and Surgery in 1901. He was professor emeritus of the University of Oregon Medical School, Portland. He held a membership in the Oregon State Medical Society and the Pacific Coast Oto-Ophthalmological Society and was a fellow of the American College of Surgeons. He served on the staffs of the Doernbecher Memorial Hospital for Children and the Multnomah Hospital in Portland, Oregon.

Dr. Kiehle is survived by his wife, a son, David L. Kiehle of Portland, and a daughter, Mrs. George Veness of Evanston, Illinois.

ANDREW JOSEPH LAMB

Dr. Andrew Joseph Lamb of Cleveland died on February 9, 1953, at the age of 41. Dr. Lamb was a specialist certified by the American Board of Otolaryngology and a Fellow of the American Academy of Ophthalmology and Otolaryngology. He received his education at Western Reserve University, obtaining the degree of Bachelor of Science in 1932, and in 1935 he was granted the degree of Doctor of Medicine from the Western Reserve University School of Medicine.

A Captain in the Medical Corps from 1943 to 1947, Dr. Lamb was a resident in Otolaryngology in St. Luke's Hospital, Cleveland, from 1935 to 1938. He began the practice of medicine in 1938 in Cleveland, where he was on the staff of St. Luke's and Marymount hospitals. He was a member of the Cleveland Academy of Medicine, the Ohio State Medical Association and the American Medical Association.

Dr. Lamb is survived by his wife, Mrs. Eleanor Lamb, a son, Andrew, and a daughter, Patricia.

CARL LEVIN LARSEN

Dr. Carl Levin Larsen of St. Paul died on January 29, 1953, at the age of 71. Dr. Larsen was a graduate of the Minneapolis College of Physicians and Surgeons, medical department of Hamline University, in 1904. He was a diplomate of the American Board of Ophthalmology and a specialist certified by the American Board of Otolaryngology.

A Life Fellow of the American Academy of Ophthalmology and Otolaryngology, Dr. Larsen was a fellow of the American College of Surgeons and past president of the Ramsey County Medical Society. He was affiliated with Miller, St. Luke's and Bethesda hospitals and Gillette State Hospital for Crippled Children.

Dr. Larsen is survived by his daughter, Mrs. Gilbert Brown, his son, Frank E., and six grandchildren.

MURRAY A. LAST

Dr. Murray A. Last was a native of New York City and received his medical education at Univeristy and Bellevue Hospital Medical College, where he was granted the degree of Doctor of Medicine in 1927.

A specialist certified by the American Board of Ophthalmology, Dr. Last was ophthalmic surgeon at the Manhattan Eye, Ear and Throat Hospital; ophthalmologist at Midtown Hospital, and consulting ophthalmologist at the Lexington School for the Deaf. He also served as chief of the eye clinic at Mount Sinai Hospital.

Dr. Last was a Fellow of the American Academy of Ophthalmology and Otolaryngology, and of the American College of Surgeons, and a member of the Association for Research in Ophthalmology.

Death occurred on June 25, 1953.

MARVIN LUTHER LATIMER

Dr. Marvin Luther Latimer was born at Honea Path, South Carolina, on September 8, 1907. He attended Woffard College at Spartanburg, South Carolina, and received his degree in medicine from Vanderbilt University School of Medicine at Nashville, Tennessee, in 1932. He did postgraduate work in otolaryngology at Yale University School of Medicine, and began the practice of his specialty at Clifton Springs, New York, in 1935. He returned to New Haven in 1940, and at the time of his death, April 17, 1953, he was associate clinical professor of otolaryngology at Yale University School of Medicine and attending surgeon at Grace-New Haven Community Hospital.

Dr. Latimer was a specialist certified by the American Board of Otolaryngology. He was a Fellow of the American Academy of Ophthalmology and Otolaryngology, and a member of the New England Otolaryngologic Society. He also held membership in local, state and national medical associations.

Dr. Latimer is survived by his wife, Mildred Stansill Latimer, a son, Marvin Luther, Jr., and a daughter, Corrie Tillinghast.

LOUIS LEVY

Dr. Louis Levy of Memphis, Tennessee was born February 7, 1889, at Paducah, Kentucky, and died on October 20, 1952, at Memphis. He attended Nashville High School and later worked as a pharmacist at the University of Tennessee. He received the degree of Doctor of Medicine in 1910 from the University of Tennessee College of Medicine. He was a resident surgeon at Brooklyn Eye and Ear Hospital from 1911 to 1912, and worked at the Manhattan Eye, Ear and Throat Hospital from 1914 to 1915. He began the practice of medicine in 1912 at Memphis, Tennessee.

Dr. Levy was a Life Fellow of both the American Academy of Ophthalmology and Otolarnygology and the American College of Surgeons. He was a specialist certified by the American Board of Ophthalmology and the American Board of Otolaryngology, and formerly was associate professor of otolaryngology of the University of Tennessee College of Medicine. He was affiliated with the Memphis Eye, Ear, Nose and Throat Hospital and the Shelby County Hospital, Crippled Children's Hospital School and the Hospital for Crippled Adults.

Dr. Levy was a founder of the Memphis Eye, Ear, Nose and Throat Hospital and an organizer of the Mid-South Sight Conservation Association. He was past president of the Memphis Symphony Society and the Memphis Chapter of the Reserve Officers Association. He was a member of the Shelby County Medical Society, Tennessee State Medical Society, Tri-State Medical Society, Memphis Society of Ophthalmology and Otolaryngology, the Southern Medical Association, American Laryngological, Rhinological and Otological Society and the American Medical Association.

Dr. Levy was very active in organizations of his church and in civic affairs. In 1950 he was named the "outstanding Jewish citizen of the year" by Alpha Zeta Tau, a Jewish fraternity. He presented a fine collection of lithographs, etchings and woodcuts to the Brooks Memorial Arts Gallery in 1947.

Mrs. Caryne E. Levy, his wife, survives, as well as a daughter, Mrs. B. F. Schwartz of Los Angeles, a son, J. L. Levy of Memphis, two brothers, a sister and five grandchildren.

EDWARD ANDERSON LOOPER

Dr. Edward Anderson Looper of Baltimore was a Life Fellow of the American Academy of Ophthalmology and Otolaryngology and a fellow of the American College of Surgeons and the International College of Surgeons. He was born December 16, 1888 and died January 14, 1953.

Dr. Looper received his medical education at University of Maryland School

of Medicine, being awarded the degree of Doctor of Medicine in 1912. For a number of years he was professor of ophthalmology, rhinology and otology at his alma mater. He was a specialist certified by the American Board of Ophthalmology and the American Board of Otolaryngology, and was a member of the American Laryngological Association, the American Laryngological, Rhinological and Otological Society, and the American Broncho-Esophagological Association, of which he had been vice president.

Dr. Looper was affiliated with Maryland General, University, Baltimore Eye, Ear and Throat, and Franklin Square hospitals, Baltimore City Hospitals, and James Lawrence Kernan Hospital and Industrial School for Crippled Chilren, all in Baltimore, and Maryland Tuberculosis Sanitarium in Salisbury and Eudowood Sanatorium in Towson. He was a member of the staffs of Union, St. Agnes and West Baltimore General hospitals, Hospital for Women and Provident Hospital and Free Dispensary.

His wife, Mrs. Lola Patenall Looper, and three children survive.

PAUL LUX

Dr. Paul Lux was born 1884 in New York City and died September 20, 1952 at Kansas City, Missouri, where he had practiced medicine since 1905. Dr. Lux received his preliminary education in New York City and the degree of Doctor of Medicine from University Medical College of Kansas City in 1905. He did postgraduate work in anesthesia at Columbia Medical College in 1910, and in plastic surgery and otolaryngology in Berlin and Vienna in 1920.

A Senior Fellow of the American Academy of Ophthalmology and Otolaryngology, Dr. Lux was a member of the Jackson County Medical Society, the Kansas City Society of Ophthalmology and Otolaryngology and the American Laryngological, Rhinological and Otological Society. He was a specialist certified by the American Board of Otolaryngology. Dr. Lux was affiliated with Menorah and Kansas City General hospitals.

He is survived by his wife, Mrs. Caroline N. Lux and a son, Lt. Paul A. Lux.

JOHN ALEXANDER MAC MILLAN

Dr. John Alexander MacMillan, of Montreal, Quebec, Canada, was born in Finch, Ontario, Canada on May 22, 1885. He obtained his early education at the Finch Public School and at Cornwall High School. He was graduated from McGill University in 1906 with the degree of M.D., C.M. Following an internship at the Royal Victoria Hospital, in 1908 he entered upon his specialized training at the Manhattan Eye and Ear Infirmary, first taking his training in otolaryngology, and later in ophthalmology. The years 1911 to 1912 were spent in postgraduate study in Germany, Austria and England. In 1913 he returned to Montreal to undertake private practice in ophthalmology and joined the staff of the Royal Victoria Hospital. He was also appointed demonstrator at McGill University at that time.

In the succeeding years he steadily advanced in his appointments at both McGill University and the Royal Victoria Hospital until 1940, at which time he became Ophthalmologist-in-Chief at the Royal Victoria Hospital. In 1941 he was appointed Professor and Chairman of the Department of Ophthalmology at McGill University. For many years he served as consultant to the Jewish Memorial Hospital in Montreal and to the Physician's Hospital, Plattsburg, New York.

In 1914 Dr. MacMillan joined the Royal Army Medical Corps and served overseas in Canadian General Hospital no. 3, with the rank of major. From 1918 to 1919 he served as Consultant in Ophthalmology for the Canadian Corps.

In 1920, he returned to practice and was elected a Fellow of the American College of Physicians and Surgeons. In 1931 he was elected a Fellow of the American Ophthalmological Society, in which he was active for many years, serving on several committees within the Society and being chairman of its Council from 1949 to 1950. He also served at one time as secretary and later as president of the Montreal Ophthalmological Society; as member of the Council and later as president of the Canadian Ophthalmological Society; as president of the Montreal Medico-Chirurgical Society; as chairman of the section of ophthalmology of the Canadian Medical Association, and as chairman of the medical board of the Royal Victoria Hospital from 1945 to 1948. For four years he was vice-president of the Pan-American Congress of Ophthalmology.

Dr. MacMillan's contributions to the society in which he lived were not only those of a physician, but also those of a scientist. He was a frequent contributor to scientific journals, particularly those of his specialty.

Dr. MacMillan was a Senior Fellow of the American Academy of Ophthalmology and Otolaryngology, being a specialist certified by the American Board of Ophthalmology. He is survived by two daughters, Mrs. Margaret Kerr and Mrs. Marian Cooper, and three grandchildren.

JOHN SILLIMAN MACNIE

Dr. John Silliman Macnie of Minneapolis died on January 30, 1953, at the age of 78. Dr. Macnie was born in Newburg, New York, on May 21, 1874. He received his medical degree from Columbia University College of Physicians and Surgeons, New York, in 1896. He was formerly associate professor of ophthamology at the University of Minnesota Medical School and associate professor of ophthalmology and otology at the University of Minnesota Graduate School.

A Life Fellow of the American Academy of Ophthalmology and Otolaryngology, Dr. Macnie was a specialist certified by the American Board of Ophthalmology and the American Board of Otolaryngology. He was also a fellow of the American College of Surgeons.

Dr. Macnie began the practice in Minneapolis and joined the staff of the University of Minnesota Medical School in 1904 after graduate study in London and Vienna. He retired from active practice in 1944. He had also served on the staffs of Northwestern and St. Barnabas hospitals.

Survivors include two sons, Dr. John P., of New York City, and Robert O. of Minneapolis.

WILLIAM J. MARSHALL

Dr. William J. Marshall of Missoula, Montana, was born September 9, 1875, in Owosso, Michigan. He received his preliminary education in Chesaning, Michigan, and later took the degree of Bachelor of Arts from the University of Michigan. He was awarded a degree in medicine from the University of Michigan Department of Medicine and Surgery, Ann Arbor, in 1909. He was a specialist certified by the American Board of Otolaryngology, a Fellow of the American Academy of Ophthalmology and Otolaryngology, and of the American College of Surgeons.

He was a member of the Pacific Coast Oto-Ophthalmological Society and was affiliated with St. Patrick and Memorial hospitals of Missoula.

Dr. Marshall died on September 23, 1952, and is survived by his wife, Mrs. Maud M. Marshall, and a son, Donald Howard Marshall.

RICHARD EDWARD MERCER

Dr. Richard Edward Mercer of Detroit was born in Pickering, England, January 10, 1874, and died on October 28, 1952, at the age of 78. He received his medical degree from Detroit College of Medicine in 1897 and was a specialist certified by the American Board of Otolaryngology. He was a Life Fellow of the American Academy of Ophthalmology and Otolaryngology, a fellow of the American College of Surgeons, and a member of the American Laryngological, Rhinological and Otological Society.

Dr. Mercer was emeritus professor of physical diagnosis of his alma mater, now known as Wayne University College of Medicine. For many years he was affiliated with Providence Hospital, where from 1918 to 1928 he served as president of the staff and continued as a member of the executive committee until 1934. He was on the staff of Florence Crittendon Hospital and on the consulting staff of Receiving Hospital.

ALONZO BOLEN MIDDLETON

Dr. Alonzo Bolen Middleton was born on January 3, 1876, at Lynxville, Illinois, and died on September 21, 1952 at Pontiac, Illinois, where he had practiced for many years. Since his retirement in 1945, he had lived in Clermont, Florida.

A Life Fellow of the American Academy of Ophthalmology and Otolaryngology, Dr. Middleton was awarded the degree of Doctor of Medicine from Barnes Medical College at St. Louis, Missouri in 1898. He did postgraduate study in Vienna, and in Berlin. He began the practice of medicine in Pontiac, Illinois, in 1898. At one time he was affiliated as house surgeon with Moorfields Eye Hospital in London, England. He was a member of the American Medical Association, the Livingston County Medical Associa-

tion, and the Illinois State Medical Society.

Dr. Middleton is survived by six children, Jonathan E. and Glenn Y. Middleton of Clermont, Florida, London G. Middleton of Peoria, Mrs. Anna M. Opperman of Pontiac and Mrs. Elizabeth M. Dearlove of Glen Ellyn, Illinois, and Mrs. Dorothea M. Duffney of Mt View, Rhode Island.

HUGH MILLER

Dr. Hugh Miller of Kansas City, Missouri, was a Life Fellow of the American Academy of Ophthalmology and Otolaryngology. He received his medical degree from Kansas City Medical College in 1897 and was affiliated with St. Mary's Hospital, where he died on September 11, 1952, at the age of 85.

ROY SEELEY MOORE

Dr. Roy Seeley Moore of Syracuse, New York, was born on September 25, 1884, at Delphi Falls, New York. He obtained his early education at Delphi Falls and then went to Syracuse University, where he was granted the degree of Bachelor of Science in 1907. In 1912 he received his medical degree from Syracuse University College of Medicine. He spent six months of study in Vienna in 1924.

A Fellow of the American Academy of Ophthalmology and Otolaryngology, Dr. Moore was a specialist certified by the American Board of Otolaryngology. He was also a fellow of the American College of Surgeons and a member of the American Laryngological, Rhinological and Otological Society.

He was affiliated with General Hospital and the Hospital of the Good Shepherd and served for more than thirty years as an associate professor of otolaryngology at the Syracuse University College of Medicine.

Dr. Moore died at Fort Lauderdale, Florida, on May 26, 1953. He is survived by his wife, a son, Roy Seeley Moore, Jr., and a daughter, Rachel C. Moore.

OLIN WINN MOSS

Dr. Olin Winn Moss of Lake Charles, Louisiana, died on January 9, 1953, at the age of 60. Dr. Moss was born on March 23, 1892, at San Antonio, Texas and obtained part of his early education at Vanderbilt University. He was awarded the degree of Doctor of Medicine in 1920 from Tulane University of Louisiana School of Medicine, New Orleans.

A Fellow in the American Academy of Ophthalmology and Otolaryngology, Dr. Moss was a specialist certified by the American Board of Otolaryngology. He was also a fellow of the American College of Surgeons.

Dr. Moss began the practice of medicine in 1922 at Lake Charles and was on the staffs of St. Patrick's and Lake Charles Memorial hospitals. He was a member of the American Medical Association, the Southern Medical Association, the Louisiana State Medical Society and the Calcasieu Parish Medical Society.

Survivors are his wife, Mrs. Katherine Roussel Moss, and his daughter, Mrs. Watson Tebo.

CHARLES ABRAM PFAFFLIN

Dr. Charles Abram Pfafflin was born in 1872 in Bowling Green, Kentucky, and died December 30, 1952 in Indianapolis, Indiana. He received his medical degree from Medical College of Ohio at Cincinnati in 1893 and studied extensively in Berlin, Vienna, Prague and London. He began the practice of medicine in 1899 in Cincinnati.

A Life Fellow of the American Academy of Ophthalmology and Otolaryngology, Dr. Pfafflin was a fellow of the American College of Surgeons and an associate fellow of the American Medical Association. He was a member of the Indianapolis Medical Society and the Indiana State Medical Association. He was on the staff of Methodist Hospital in Indianapolis.

Dr. Pfafflin is survived by his wife, Mrs. Grace Pfafflin, a daughter, Mrs. William J. Lochhead, and one grandson.

ROBERT LEE PIERCY

Dr. Robert Lee Piercy of Youngstown, Ohio, was born on July 15, 1912, at Delta, Iowa. He received his early education at South High School, Youngstown, the degree of Bachelor of Arts from Stanford University, and his medical degree from University of Rochester School of Medicine and Dentistry in 1938. He was a specialist certified by the American Board of Otolaryngology. He served as an intern for one year in general medicine, one year

in pediatrics and two years in ear, nose and throat at Strong Memorial Hospital. He began the practice of medicine in 1942 in Youngstown.

A Captain, serving in World War II, Dr. Piercy was Chief of the ear, nose and throat section at Camp Callan, San Diego, California, assistant chief of otolaryngology at Madigan General Hospital, at Fort Lewis, Washington, and was discharged from the army medical corps in 1946.

A Fellow in the American Academy of Ophthalmology and Otolaryngology, Dr. Piercy was on the staff at Youngstown Hospital and an instructor in the nurses training school.

Dr. Piercy is survived by his wife, Mrs. Marjorie Rouch Piercy, three daughters, Jo Ann, Barbara Lee and Carolyn Eve, his parents, Dr. and Mrs. F. F. Piercy, and a brother, Roger Alan Piercy.

HUGO REIM

Dr. Hugo Reim was born April 7, 1883, in St. Louis, Missouri, and died in the city of his birth on April 15, 1953. Dr. Reim had been granted the degree of Doctor of Medicine in 1904 from Barnes Medical College and began the practice of medicine in that same year in St. Louis.

During his busy years of practice Dr. Reim held various teaching positions. At the time of his death, he was assistant professor of clinical ophthalmology at St. Louis University School of Medicine, a position to which he was appointed in 1945 after having served as assistant in ophthalmology from 1922 to 1926, instructor from 1926 to 1929 and senior instructor from 1929 to 1945. He was also ophthalmologist at St. Louis Female Hospital from 1908 to 1912, at St. Louis Mullanphy Hospital from 1913 to 1930, at St. Louis Training School in 1920 and at De Paul Hospital from 1930 to 1944; assistant ophthalmologist at St. Louis City Hospital from 1926 to 1935, at St. Mary's Group of Hospitals from 1933 to 1935 and associate ophthalmologist in 1935; ophthalmologist at the Masonic Home Hospital and the Shriner Hospital for Crippled Children.

Dr. Reim was a Life Fellow of the American Academy of Ophthalmology and Otolaryngology, being a specialist certified by the American Board of Ophthalmology. He was a member of the American Medical Association, the Missouri State Medical Association, the St. Louis Medical Society, and the St. Louis Ophthalmological Society. He served during World War I.

A daughter, Mrs. Otto Keller of Palisade, New Jersey, survives.

ELIZABETH POND RINDLAUB

Dr. Elizabeth Pond Rindlaub of Fargo, North Dakota, who died on August 5, 1952, was born on January 27, 1873, at Plattsville, Wisconsin. She received her early education in Wisconsin attending the State Normal School in Plattsville. She received her medical degree from the University of Michigan Medical School, Ann Arbor, in 1899 and took some postgraduate work at Edinburgh, Scotland. She began the practice of medicine in 1899 in Fargo.

A Life Fellow of the American Academy of Ophthalmology and Otolaryngology, Dr. Rindlaub was a specialist certified by the American Board of Otolaryngology. She was a fellow of the American College of Surgeons, and a member of North Dakota Academy of Ophthalmology and Otolaryngology and of the Minnesota Academy of Ophthalmology and Otolaryngology.

Dr. Rindlaub is survived by two sisters, Mrs. J. H. Robertson of Plattsville, Wisconsin, and Mrs. J. D. Wooledge of Fargo.

JOHN GILLIS SANDERS

Dr. John Gillis Sanders of Foley, Alabama, was born August 12, 1891 in Spring Hill, Pike County, Alabama, and died June 1, 1953, at Mobile. His preliminary education was received at the University of Alabama, and he was awarded the degree of Doctor of Medicine in 1913 from Tulane University of Louisiana School of Medicine, New Orleans. He did postgraduate work at the New York Eye and Ear Hospital, and began practice in 1915 in Troy, Alabama.

A Fellow of the American Academy of Ophthalmology and Otolaryngology, Dr. Sanders was a specialist certified by the American Board of Otolaryngology, a member of the Mobile County Medical Society, the Baldwin County Medical Association, the American Medical Associ-

ation, the American Association of Railroad Surgeons, and the Alabama Medical Association.

He was affiliated with Providence Hospital, Mobile Infirmary, Mobile City Hospital, and Allen Memorial Hospital as a consultant.

Dr. Sanders is survived by his wife, Mrs. Tessa Wellborn Sanders, a son, William Gillis Sanders, and a daughter, Mrs. Carolyn Sanders Houston.

LEROY LEE SAWYER, JR.

Dr. Leroy Lee Sawyer, Jr., of Washington, D. C., was born in Great Bridge, Virginia, on December 2, 1898, and died November 9, 1952. He attended public schools in Norfolk County, Hickory, and Great Bridge, Virginia, and received the Bachelor of Arts degree in 1920 from Randolph-Macon College at Ashland. In 1922 he was awarded the degree of Doctor of Medicine from Medical College of Virginia in Richmond.

Dr. Sawyer was a Fellow of the American Academy of Ophthalmology and Otolaryngology, being a specialist certified by the American Board of Otolaryngology. He began the practice of medicine in Washington, D. C. in 1926, previously having been with the United States Public Health Service, and with the Davis Clinic at Marion, Virginia, from 1923 to 1924.

He was a member of the American Laryngological, Rhinological and Otological Society, the International Medical Club of Washington, D. C., the Medical Review Club of Washington, D. C., the American Medical Association, the District Medical Society and the Southern Medical Association.

One of the outstanding contributions of Dr. Sawyer to his specialty was evidenced in the foundation and direction of the Conservation of Hearing and Speech Clinic at the Episcopal Eye, Ear and Throat Hospital, where he also served as a member of the board of trustees. He was assistant clinical professor of otorhinolaryngology at George Washington University School of Medicine and was a surgeon at Episcopal Eye, Ear and Throat, Emergency, Children's, Gallinger Municipal and George Washington University hospitals.

Dr. Sawyer is survived by his wife, Mrs. Blanche Wingo Sawyer, two daughters, Jane Blanche, and Lee Etta, his mother, Mrs. Leroy Sawyer, Sr. of Great Bridge, and a sister, Mrs. Willard Hart of Farmville, Virginia.

JOHN JOSEPH SHEA

Dr. John Joseph Shea of Memphis, Tennessee, was born in Memphis on January 17, 1889, and died in New Orleans on November 28, 1952. Dr. Shea received his medical degree from University and Bellevue Hospital Medical College of New York in 1911 and was a specialist certified by the American Board of Otolaryngology. From 1931 to 1934 he was secretary and in 1934-1935 chairman of the Section on Laryngology of the American Medical Association.

At the time of his death, Dr. Shea was President-Elect of the American Academy of Ophthalmology and Otolaryngology, of which he had been Vice-President and Member of the Council. He was also a Life Fellow of the Academy. He was a member and formerly vice-president of the American Laryngological Association, member, formerly member of the council and president of the American Laryngological, Rhinological and Otological Society, member and formerly member of the council of the American Otological Society.

Dr. Shea was a fellow of the American College of Surgeons and served his country during World War I. He was affiliated with St. Joseph, Baptist Memorial, Methodist, and Memphis Eye, Ear, Nose and Throat hospitals. His son, Dr. John Joseph Shea, Jr., was in practice with his father.

GEORGE HULL SHUMAN

Dr. George Hull Shuman of Pittsburgh died on September 3, 1952, at the age of 68. He had received his medical degree from Medico-Chirurgical College of Philadelphia in 1910 and was a specialist certified by the American Board of Ophthalmology.

A Life Fellow of the American Academy of Ophthalmology and Otolaryngology, Dr. Shuman was formerly president of the Pittsburgh Ophthalmological Society and was affiliated with Western Pennsylvania Hospital.

EARLE TERRY SMITH

Dr. Earle Terry Smith of West Hartford, Connecticut, a Life Fellow of the American Academy of Ophthalmology and Otolaryngology, died on July 26, 1952 at the age of 75. Dr. Smith was born in Bridgeport, Connecticut, and received his medical degree from Yale University School of Medicine at New Haven in 1897 and an honorary degree of Master of Arts from Trinity College in 1903.

A specialist certified by the American Board of Ophthalmology, Dr. Smith was a fellow of the American College of Surgeons. He was a member of the American Otological Society, the American Ophthalmological Society, the Hartford Medical Society, the Hartford County Medical Association, the Connecticut State Medical Society, the American Medical Association and the Association for Research in Ophthalmology. He was a Major in the Medical Corps, Yale unit, in World War I.

Dr. Smith was consulting ophthalmologist at McCook Memorial Hospital, the Institute of Living, St. Francis Hospital, New Britain General Hospital, Manchester Memorial Hospital, Cyril and Julia C. Johnson Memorial in Stafford Springs, Bristol Hospital and Hartford Hospital, where he was also on the Board of Managing Directors.

Surviving Dr. Smith is his wife, Mrs. Ethel Walker Smith.

VICTOR CONWAY SMITH

Dr. Victor Conway Smith, of New Orleans, a Life Fellow of the American Academy of Ophthalmology and Otolaryngology, was born on January 20, 1875, in Vicksburg, Mississippi. He obtained his preliminary education at Washington and Lee University and the degree of Doctor of Medicine from the Medical Department of Tulane University of Louisiana, New Orleans, in 1899. He did postgraduate work at Philadelphia, Budapest and Paris.

Dr. Smith began the practice of medicine in 1899 at Lake Providence, Louisiana. He was formerly on the faculty of his alma mater as associate professor of ophthalmology, and was on the staff of New Orleans Eye, Ear and Throat, Southern Baptist and Illinois Central Railroad hospitals.

His society affiliations included the Louisiana State Medical Association, Southern Medical Association, American Medical Association, New Orleans Academy of Ophthalmology, and Louisiana-Mississippi Ophthalmological and Otolaryngological Society. He was a fellow of the American College of Surgeons.

Survivors include his wife, Mrs. Camille Pichet Smith, a daughter, Mrs. Clarence Gelpi, a brother, Clarence Smith and two sisters, Mrs. Clarence Johnson and Mrs. Harry Johnson.

ALVA BOYD SOWERS

Dr. Alva Boyd Sowers of Chicago was born in 1884 in Genoa, Illinois, and died on August 31, 1952, at Evanston. Dr. Sowers was awarded the degree of Doctor of Medicine from the Hahnemann Medical College and Hospital, Chicago, in 1909 and was a specialist certified by the American Board of Ophthalmology. He began the practice of medicine in 1910 in Chicago.

A Fellow of the American Academy of Ophthalmology and Otolaryngology, Dr. Sowers was also a fellow of the American College of Surgeons and a member of the American Medical Association and the Chicago Ophthalmological Society. He was on the staff of the Illinois Eye and Ear Infirmary, St. Luke's and the Illinois Masonic hospitals.

Dr. Sowers is survived by his wife and a daughter.

GEORGE WILLIAM STIMSON

Dr. George William Stimson was born in Columbus, Ohio, in 1880. He received his undergraduate education at Ohio State University, and received his degree in medicine from the University of Pennsylvania School of Medicine in 1903. Postgraduate work in ophthalmology and otolaryngology was done in Paris and Vienna.

Dr. Stimson was certified by the American Board of Otolaryngology in 1925 and began the practice of his specialty in Warren, Ohio, where he was on the staff of the Warren City Hospital and Trumbull Memorial Hospital.

Dr. Stimson was a Life Fellow of the American Academy of Ophthalmology and Otolaryngology, and a fellow of the American College of Surgeons, as well as a member of national, state and local medical societies.

Surviving Dr. Stimson are two daughters, Phyllis of Philadelphia and Mrs. Ann Stimson Kennedy of Sewickley, Pennsylvania.

WILLIAM AARON STOUTENBOROUGH

Dr. William Aaron Stoutenborough, who was born near Maroa, Illinois, in 1886, received the degree of Doctor of Medicine from the Eclectic Medical College in Cincinnati in 1913. After engaging in general practice for a number of years, he entered the postgraduate school of the University of Pennsylvania College of Medicine in 1923, and in 1925 won the degree of Master of Science in Ophthalmology.

A specialist certified by the American Board of Ophthalmology, Dr. Stoutenborough was assistant professor of ophthalmology at Ohio State University College of Medicine, and served on the staffs of Grant, St. Francis, Mount Carmel, and University hospitals in Columbus, Ohio.

Dr. Stoutenborough was a Senior Fellow of the American Academy of Ophthalmology and Otolaryngology.

Death occurred on January 19, 1953.

GEORGE JAMES TAQUINO

Dr. George James Taquino, who was born in New Orleans in 1884, died in his native city on August 29, 1953.

Dr. Taquino received his degree in medicine from Tulane University of Louisiana School of Medicine in 1911. He was a specialist certified by the American Board of Otolaryngology, and served as consultant in bronchoscopy at the U. S. Marine Hospital in New Orleans. He was Senior Visiting Surgeon at Charity Hospital, Hotel Dieu, and Touro Infirmary, and was director and professor of broncho-esophagology and oto-rhinolaryngology at University of Louisiana School of Medicine.

Dr. Taquino was a Life Fellow of the American Academy of Ophthalmology and Otolaryngology. He was also a fellow of the International College of Surgeons and the American College of Surgeons and a member of the American Laryngological, Rhinological and Otological Society and the American Broncho-Esophagological Association.

Dr. Taquino is survived by his wife, Mrs. Alice Savich Taquino and a son, George J., Jr.

GEORGE HOCKEN THOMPSON

Dr. George Hocken Thompson of Pittsfield, Massachusetts, was born on August 20, 1877 at New Glasgow, Nova Scotia, and died on March 8, 1953, in Pittsfield. He received his early education at New Glasgow High School and McGill University, being awarded the degree of Doctor of Medicine from McGill University Faculty of Medicine, Montreal, Quebec, Canada, in 1899. He worked for over a year at George's and St. Mary's Hospital in London and studied for four months at Manhattan Eye, Ear and Throat Hospital and for six months in Vienna.

Dr. Thompson was a Life Fellow of the American Academy of Ophthalmology and Otolaryngology and a fellow of the American College of Surgeons. He was a specialist certified by both the American Board of Ophthalmology and the American Board of Otolaryngology. He was a member of the American Laryngological, Rhinological and Otological Society, the American Medical Association, the Massachusetts Medical Society, and the New England Otolaryngological Society. In Pittsfield he was affiliated with Pittsfield General and St. Luke's hospitals.

Survivors include a daughter, Mrs. Robert Imel, a grandson, George Robert Imel, a brother, A. Charles Thompson, and a sister, Mrs. Robert N. LeMoine.

JOSHUA WARREN WHITE

Dr. Joshua Warren White of Norfolk, Virginia, died on March 4, 1953, while vacationing in Palm Beach, Florida. Dr. White was born in 1875 in Charlotte County, Virginia, and received his early education at Hampden-Sydney. His degree in medicine was granted by the Medical College of Virginia in 1901. Soon after he began a general practice in Norfolk, but left in 1913 to become house surgeon at the Manhattan Eye, Ear and Throat Hospital in New York. During World War I he served with the rank of Captain in the Army Medical Corps, in charge of the ophthalmological department in the base hospital at Chaumont, France.

After the war, Dr. White returned to Norfolk to practice his specialties. Included in his professional work were positions as surgeon oculist for the Seaboard

Air Line Railroad, chief of the ophthalmological and otolaryngological departments at St. Vincent's Hospital and president of the hospital's medical staff, member of the visiting staff at Norfolk General Hospital, and consultant at De Paul Hospital.

Dr. White was a specialist certified by both the American Board of Ophthalmology and the American Board of Otolaryngology. He was a Fellow of the American Academy of Ophthalmology and Otolaryngology and of the American College of Surgeons, a diplomate of the American Medical Association, and a member of the American Laryngological, Rhinological and Otological Society. He was a past vice-president of the Virginia State Medical Society, a member of the Association of Seaboard Air Line Railway Surgeons, and a past president of the Norfolk County Medical Society.

Dr. White was a trustee of Hampden-Sydney College and past chairman of its alumni fund. The Algernon Sydney Sullivan Medallion was awarded him for his contributions in the field of education. From 1946 to 1949 he served as a member of the Committee on Educational Institutions, Synod of Virginia.

Surviving Dr. White are his wife, Mrs. Emily Johnston White, and three sons, Robert, Alan Johnston, and Joshua Warren.

EUGENE EMERSON WILLISON

Dr. Eugene Emerson Willison was a native of Indiana. His undergraduate work was done at Purdue University and Kansas State College, and in 1927 he received his medical degree from Indiana University School of Medicine in Indianapolis. Postgraduate work in ophthalmology was done at the University of Pennsylvania School of Medicine in 1934 after Dr. Willison had spent several years as staff physician of the American Red Cross in Washington, D. C. While in Washington he compiled the American Red Cross First Aid Textbook.

Dr. Willison was a specialist certified by the American Board of Ophthalmology. He was a Fellow of the American Academy of Ophthalmology and Otolaryngology, and a member of state and local medical societies. At the time of his death on January 24, 1953, he was affiliated with Mercy Hospital and Merced General Hospital in Merced, California, where he was engaged in practice.

Surviving Dr. Willison are his wife, Lydia, and a son, Eugene, Jr.

KARL CHRISTIAN WOLD

Dr. Karl Christian Wold, a Senior Fellow of the American Academy of Ophthalmology and Otolaryngology, was born in St. Paul, Minnesota, on July 28, 1891. He received his early education in Minnesota, obtaining the degree of Bachelor of Science from the University of Minnesota, and the medical degree in 1914 from the University of Minnesota Medical School in Minneapolis. He did postgraduate work at the Chicago Eye, Ear, Nose and Throat Hospital and at the University of Minnesota Graduate School. He began the practice of medicine in 1915 in St. Paul, where he continued until his death, December 24, 1952.

A specialist certified by the American Board of Ophthalmology, Dr. Wold was a fellow of the American College of Surgeons, past president of the Minnesota Academy of Ophthalmology and Otolaryngology, a member of the Ramsey County Medical Society and the St. Paul Clinical Club. He was affiliated with Bethesda, Miller and Ancker hospitals.

Interests in the health of our Presidents prompted him to write a book entitled "Mr. President, How's Your Health?" Its appearance on the bookstands of the nation and its review in current periodicals excited wide interest and projected him into a mild controversy with members of the Franklin Delano Roosevelt family.

Dr. Wold is survived by his wife, Mrs. Mabel Wold, two sons, Dr. Keith C. Wold of St. Paul and Sidney Wold, a medical student at the University of North Dakota School of Medicine, and two daughters, Mrs. Robert Johnson of Princeton, New Jersey, and Mrs. Mary Strong of Austin, Minnesota.

TEACHERS' SECTION IN OPHTHALMOLOGY

October 12, 1952

A. D. RUEDEMANN, M.D., *Chairman*

Introduction

As you all know, last year we reinstituted the Teachers' Section and we had a fairly good discussion on undergraduate education. We thought we would follow the same line that the nose and throat people follow and this year talk about graduate education. We are all interested in graduate education, some of us from a different point of view from others. But the prime purpose is education and it might be that by mutual understanding some of us can obtain information that will help us in doing our work. I am sure the students will be the gainers by it all.

I am sure you all realize the terrific expense now entailed in any type of education and the difficulty with which money is obtained to do the job. We have had this problem brought home to us in the general hospital. More and more of the residents will not sign up for the average institution that does not have some teaching program and most hospitals now have to face the fact that they either will become teaching institutions or they will not obtain residents. I think the same thing holds true in our special hospitals.

The Home Study Course: Its Value and Place in Graduate Education

HENDRIE W. GRANT, M.D.

MINNEAPOLIS, MINN.

The Home Study Courses in Ophthalmology which had its inception in 1940 has just completed the twelfth year. During that time 3,319 physicians were participants in the Courses which were distributed as follows:

REGISTRATIONS

Year	*Ophthalmology*	*Otolaryngology*	*Total*
1940-1941	301	114	415
1941-1942	238	117	355
1942-1943	163	81	244
1943-1944	126	74	200
1944-1945	175	84	259
1945-1946	290	112	402
1946-1947	353	191	544
1947-1948	436	220	656
1948-1949	375	230	605
1949-1950	317	184	501
1950-1951	244	117	361
1951-1952	301	130	431
TOTALS	3,319	1,654	4,973

In 1947-1948 a fairly complete analysis of those taking the course was made.

I. *Present Status of Those Replying*

In residencies		149
In preceptorships		13
In practice		288
No information		18
TOTAL		468

II. *Regarding Residency*

In residencies		149
A. Length of residency:		
Up to and including one year	13	
One to two years	69	
Over two years	67	
B. Portion of residency completed:		
Less than one year	41	
One to two years	85	
More than two years	23	
Previous formal residency		191
A. Length of such residency:		
One year or less	35	
One to two years	101	
More than two years	47	
No information	8	
Contemplating residency	45	
In preceptorships	13	
No record of residency past, contemplated, or in progress	70	

III. *Regarding Practice*

Engaged in practice		288
A. Type of practice:		
Private	246	
Institutional	31	
Both private and institutional	11	
B. Years in practice:		
Five years or less	164	
Five to ten years	33	
Ten to twenty years	57	
More than twenty years	34	

IV. *Regarding Basic Course*

Had no basic course before residency		343
Had basic course before starting residency		125
A. Length of basic course:		
Three months or less	19	
Three to six months	30	
Six to twelve months	52	
Over twelve months	3	
No information	21	

B. Where taken:

University of Pennsylvania	19
Harvard	17
New York University	13
Ophth. Study Council, Portland	12
Northwestern University	9
Washington University	7
Tulane University	7
New York Polyclinic	6
University of Illinois	4
Ophth. Study Council, St. Petersburg	2
University of Minnesota	2
Miscellaneous	23
No information on location	4

V. *Opinions Regarding* 1947-1948 *Courses*

A. Ophthalmology		231
Too long	46	
Too brief	8	
Satisfactory	171	
Unsatisfactory (no reason given)	3	
No answer	3	
B. Otolaryngology		99
Too long	20	
Too brief	3	
Satisfactory	75	
No answer	1	
C. No indication which course was taken		138
Too long	23	
Too brief	5	
Satisfactory	102	
Unsatisfactory (no reason given)	3	
No answer	5	
D. Criticism of papers unsatisfactory		103

VI. *Opinions Regarding Length of Courses*

Favor two year course	185
Do not favor two year course	275
No opinion expressed	8

Since 1948 there seems to have been a definite increase in the number of residents who have taken the course and somewhat of a decrease by those in practice.

Of 468 1947-1948 registrants (both ophthalmology and otolaryngology) who replied to a questionnaire there were:

Residents	149
Men in practice	288

Several changes have been made within the past few years and several additions to the faculty. One of the changes was the addition of the subject of Pharmacology and Therapeutics under the supervision of Drs. Swan and Kreft. The subject of Neuro-anatomy was added to the general subject of Anatomy and Embryology. Optics included the subject of Biomicroscopy. The subjects of Perimetry and Ophthalmoscopy were separated so that Perim-

Year	*Residents*	*Practice*	*Preceptorships*	*Mil. Serv.*	**Misc.*	*Total*
1948-1949	155	186	11	14	9	375
1949-1950	158	142	5	1	11	317
1950-1951	130	95	7	3	9	244
1951-1952	153	110	7	24	7	301

etry and Neuro-ophthalmology became one subject and Ophthalmoscopy and Medical Ophthalmology a second subject.

I believe that this has been a definite improvement from a teaching angle. The subjects are still primarily basic but it is necessary also to include some clinical work.

Dr. Manuel Stillerman has been appointed to the faculty this past year by Dr. Frank Newell as an associate in Refraction. The present faculty is as follows:

Month and Subject	*Faculty*	*Consultant*
September Embryology, Anatomy and Neuro-anatomy	Raymond E. Meek (4) John W. Henderson (3)	C. Wilbur Rucker (6-4)
October Physiology	Hendrie W. Grant (7) George P. Guibor	
November Optics and Principles of Biomicroscopy	Arthur Linksz (4) Edwin F. Tait	Frederick C. Cordes (8-4)
December Refraction	Frank W. Newell (5) M. L. Stillerman (1)	Thomas D. Allen (8-5) Daniel Snydacker (8-1)
January External Diseases, Bacteriology and Virology	James H. Allen (6) S. Rodman Irvine (6) Samuel N. Key, Jr. (6)	
February Perimetry and Neuro-ophthalmology	P. J. Leinfelder (7) Cecil W. Lepard (7)	
March Extraocular Muscles	Paul T. McAlpine (7) Hunter H. Romaine (3)	Conrad Berens (10-3)
April Ophthalmoscopy and Medical Ophthalmology	John P. Macnie (7) Wm. Banks Anderson (6) Samuel D. Aiken (7)	
May Pathology	Michael J. Hogan (7) John S. McGavic (4)	Georgiana D. Theobald (9-4)
June Pharmacology and Therapeutics	Kenneth C. Swan (4) Alfred J. Kreft (4)	

* Registrations from foreign countries and a few others whose status could not be determined from applications.

W. L. Benedict, M.D., Rochester, Minn.: Our present method of instruction in the medical specialties is largely a matter of evolution. It is easily recalled by those of us who have been in the picture for a long time that the individual instruction that we received some years ago is now supplanted by mass instruction by devices, electronics and means of propaganda that were not in existence at that time. While our methods of training have been altered to fit the circumstances of our times it is presumptive to believe that we have reached perfection in educational methods or in the extent of requirements. We attempt to maintain a high quality of education and to provide facilities for learning on a national level by having some concept of the needs of the times.

In our internships thirty to forty years ago there were no courses of instruction in the so-called fundamental subjects as we know them today. Yet we had some guidance by teachers of prominence that inspired us to go into the fundamental aspects of ophthalmology. I have precedence here this morning in bringing in some personal references. I may say that my introduction to ophthalmology was purely accidental. I had an opportunity to take an internship and obtain personal instruction in ophthalmology in the University of Michigan Hospital. The appointment was for one year. There was no attempt to set up a curriculum for graduate study. I served three years in the department and thereby established a precedent that has been followed there and elsewhere and is now the stipulated time requirement of the Board of Ophthalmology for examination. There were no courses in graduate ophthalmology as we now know them. We learned by personal contact with our chiefs and with the other interns where ophthalmology fitted into the whole picture of medicine. A specialist had to advance pretty largely by pulling on his own bootstraps. I have been fortunate to live through an evolution in graduate training methods and to have had an active part in the establishment of the graduate training programs of the Academy.

The difference in the competence of medical school faculties and training equipment gives rise to a serious problem in graduate education. That residencies for students are available in hospitals that do not have adequate teaching staffs must be admitted. We need all clinical facilities available wherever they are; and the teaching staffs should be encouraged to do the best they can and helped in every way possible. Board requirements for certification are high and the smaller hospitals need help for training their residents. Wherever possible instruction in the fundamental subjects should be given by a clinician. To cite a specific example; physiologic optics requires some knowledge of mathematics and can be taught as a branch of physics. A man working on an optical bench can draw diagrams and solve formulas but it is a purely dry concept of relationships and physical reactions that are entirely devoid of functional significance. On the other hand the doctor who sits at the trial case with his patient must think in terms of deviations of light pathways that are caused by the different optical media of the patient's eye. His application of physiologic optics is quite different from that of the optician. So while it is possible for a physicist to give lucid lectures on physiologic optics the impression he gives the students is somewhat different from what would be given by a practicing ophthalmologist who must meet problems pertaining to improving visual function even though they may use the same devices. There is a difference; also a distinction. Students might better be instructed by a practicing ophthalmologist than by a teacher in the department of physics.

Since the student learns by experience that a large part of his education depends on his own efforts, some of his best work is done when he is alone. The best teaching, therefore, may consist in guidance and stimulation. There is an advantage in teaching small groups. This came up some years ago in the conduct of the Academy Instruction Courses and our attempt to do something in the field of mass education. We were accustomed to large audiences and to having lectures given by learned men on selected subjects. We also knew that in smaller groups of fifteen to thirty a better response was evident to the teacher. This observation was taken into consideration in planning the Academy Courses. Because of the popularity of certain lecturers and for lectures on certain subjects we have found, however, that classes up to 300 are not unwieldy.

The teacher must realize that the learning ability of the individual is one of the big factors in the absorption of knowledge. That is most pointedly exemplified in ward rounds. Three to ten students can actually have their minds working on the subject at the bedside under the direction and guidance of an experienced man who not only knows the facts

of the matter before him, who not only knows the literature on the subject, but who also knows the psychology of the individual student, and if he wants to impart knowledge he has to incite interest in the mind of the student to want to pursue the subject further.

In order to help the resident in the smaller hospital the Academy has published several manuals. You are familiar with them for they have been used in increasing numbers for the past ten years. In nearly every case the author of a manual was chosen because of his particular ability to make the manual of use as a method of teaching. The manuals have proven to be very helpful and will be continued and augmented. They are not substitutes for textbooks. They are more properly to be used as guides by which the student can carry on for himself.

The Home Study Courses are designed to aid in personal study. They are also exercises in pedagogy. Outstanding teachers lay out the courses of reading and make up the question sheets and grade the answers. We are making better students by not cramming them but by teaching them how to study, and those who are not able to have personal contact with the best teachers will do the next best thing and get instruction through them by proxy.

The Home Study Courses were not primarily designed by a master mind to level off education any more than are textbooks. This method of teaching has been proven over a period of twelve years to be very successful. While I think it is very much worth while to carry it on, remember it will change, not because it is not good enough but because we must keep up with the times, and we have here a way of easily discharging the old and taking on the new. Revision of the manuals can be done economically, so we need not retain in this pedagogic process a lot of dead weight and material.

We also anticipate things that are to come and in these manuals introduce to the student who is in a small hospital some distance away from a medical teaching center, the same concept that is held in a school with an adequate teaching faculty. For instance—if a new drug looks promising but is not as yet proven it may be included in a manual but not in a textbook, because the manual is designed to be revised every two years. The Home Study Courses are up to date as a method of instruction for those who do not have residencies in teaching centers. Their development is evolutional, and to my mind they express the best pedagogic practices of our medical faculties.

Graduate Teaching in Ophthalmology

EDMUND B. SPAETH, M.D.
PHILADELPHIA, PA.

THE present Basic Science course in Ophthalmology at the graduate school of medicine with which I am connected has developed its plan as the result of the experiences of a larger number of past and present faculty members of the school as they became aware of the necessity for changes in ophthalmic teaching, and especially for a widening of the basic sciences. Two items illustrate that development and purpose rather well. The first, is the desire of the faculty that all registrants to the course qualify for a Graduate Degree, either Master or Doctor of Medical Science: and the second, that teaching of such basic subjects as physiology be upon the graduate level (cardio-vascular-renal, respiratory, neurologic, metabolic, etc.) and to the entire student body regardless of the department in which any one student may be specializing. The first is a far cry from a faculty given over to the teaching of a large number of short individual courses; the second recognizes the importance of physiology and biochemistry, general pathology, anatomy, etc., to any specialized branch of medicine.

The faculty of any full time graduate course in ophthalmology must maintain, constantly, a proportionate balance between the laboratory, the didactic, and the clinical aspects of ophthalmology, knowing that at no time should any basic science course replace a subsequent residency or assistantship. Teachers in ophthalmology realize only too well how deficient, in organized systematic instruction, are many of the present acceptable residencies in various general as well as certain of the specialty hospitals.

Some of these are potentially rich in clinical material, but, because of a shortage of teaching assistants on their staffs, are poor in basic instruction, not to mention an opportunity for original research work. Recently, two extremes have come to the attention of the writer. The first, in one nationally known specialty hospital the staff is seriously considering the prior completion of a recognized course in the basic sciences as essential before the consideration of any application. The second, at a general hospital in a large city the resident in ophthalmology received no formal instruction whatsoever in ophthalmology; also he was compelled to sign a statement prior to the start of his training that he would not open his office for the practice of ophthalmology in or in the neighborhood of that city where he was completing this residency.

It might be a wise move actually for all general hospitals and ophthalmic specialty hospitals, not connected with teaching institutions, to require such a basic science course for all applicants. Certain teaching institutions throughout the United States, too well known to need mention here, incorporate their own basic science courses within the instruction outlined to their residents. These, therefore, do not need that type of course which will be outlined directly. Both varieties of teaching plans are necessary if we are to replace the natural losses in ophthalmic personnel, as well as those needed because of the normal increase in population. In addition, a graduate school plan is advisable for that increasing number of foreign students who are now entering the United States for graduate education. This is especially important with those coming in from the Latin American countries as well as those applying from present and former colonial possessions of the United States.

Our clinical curriculum is subdivided into five departments, each under a full professor in charge of and responsible for that department. These subdivisions are medical ophthalmology, physiologic optics, pathology and bacteriology, surgery and applied ophthalmology. The first of these departments includes such allied subdivisions as neurology and neuro-ophthalmology, ophthalmoscopy, medical ophthalmology, the ophthalmologic aspects of cardio-vascular-renal pathology and endocrinology. Physiologic optics includes not only the didactic and laboratory work in physiologic optics but also such allied subjects as theoretic and applied refraction, ocular motility, slit lamp microscopy, the study of instruments and instrumentation. Pathology is largely handled through slide projection, though there is as much individual microscope work in addition as is necessary. Surgery includes not only didactic lectures and cadaver surgery, but also surgery upon pigs' eyes. Applied ophthalmology includes external diseases, the study of the blind, industrial ophthalmology, and library work. These lecture courses under the chief of the department and the associates are arranged so that basic work is given earlier in the academic year, while the more advanced work is held in the latter parts of the year.

The clinical work is given to the class in sections of three to four students each. This work is two hours in the first part of the afternoon, daily for five days of the week, with an elective on Saturday afternoons. Ten hospitals in the City of Philadelphia are used for this clinical work. The sections are rotated so that each student has the opportunity of attending each hospital at some time during the school year. The administration of cases, discussion and examination, is the responsibility of the clinical chief at these various allied and asso-

ciated clinics. All these hospitals, with the exception of the Graduate Hospital of The University of Pennsylvania and the University Hospital of the University of Pennsylvania, are through the courtesy of the institutions involved and not by reason of any administrative or academic relationship to the Graduate School of Medicine. In recent years the School has been able to handle approximately 30 students each year. A larger number than this could not be properly handled because of laboratory limitations.

The Departments of Anatomy, General Pathology, Physiology and Pharmacology, Physiological Chemistry, Neuro-anatomy and Physical Anthropology are headed by full time professors in the Graduate School. In these departments the courses are subdivided into two general classes. In some instances these lectures, upon a research graduate level, are given to the entire student body. The student body constitutes over 250 students. For instance, five days in the week physiology is given to this entire student body from 12 noon to 1 p.m. In addition to such work, the students of the various departments have specialized lectures peculiar to their departments and to their individual interests. This is especially so in Anatomy and in Physiological Chemistry. The Departments of Anesthesiology, of Dermatology and Syphilology, of Internal Medicine, of Neurology and Psychiatry, of Otolaryngology and of Radiology, within the Graduate School, designate instructors for certain courses in their allied subjects as these apply to ophthalmology. Similarly, various faculty members of the ophthalmologic faculty give a course of lectures, from two to twelve hours in length, to the Departments of Otolaryngology, Internal Medicine, Neurology and Psychiatry, Pediatrics and Gynecology and Obstetrics.

The various aspects of these courses are considered through a combination of lectures, faculty-student conferences, demonstrations, the clinics, ward rounds, laboratory sessions and seminars. In addition to these there is a minimum requirement of 200 hours of unscheduled studies as library work, museum work, medical meetings, ward consultations and case studies, all available and mostly voluntary.

The plan of study at the Graduate School is subdivided into three periods. The first period consists of an academic year of prescribed and scheduled courses. The student physicians who successfully complete the academic year of basic studies are awarded academic credit by the University. The second period of studies, leading to a Master of Medical Science degree, is through a specialty board certification method, through an approved preceptorship or through an approved residency or clinical fellowship. The minimum requirements for this division are laid down quite specifically under University regulations and are sufficiently exacting so that the student physicians' work, plus the presentation of an unpublished thesis, are sufficient to control the student physicians' training in ophthalmology. The third period of study is devoted to research pertaining to the clinical specialty concerned. Matriculation for this work must, in particular, set forth a proposal for high grade research activities. The production of unpublished research results of moment is essential for success in the candidacy for the degree of Doctor of Medical Science pertaining to the clinical specialty. For this also, the nature of the research studies proposed and the thesis subject must receive prior approval of the Dean of the Faculty.

The system, with its basic courses in the various departments and controlled,

after that first academic year, by those minimum requirements connected with the subsequent residency or assistantship, has proven to have many advantages. At this moment the writer can think of at least eight full professors of ophthalmology, not to mention associate and assistant professors of at least an equal member, from the former students of the Graduate School of The University of Pennsylvania.

LAWRENCE T. POST, M.D., St. Louis, Mo.:

Dr. Spaeth was kind enough to send me this paper and, of course, I was tremendously interested in it. I think his is the oldest graduate course in ophthalmology. Ours, at Washington University, which has been going for thirty-one years with two years out for the war, I believe is the second oldest. Since I started it at that time and have been very active in it since then, I have great faith in this type of teaching.

I also think that the course that Dr. Spaeth conducts is unique in its connection with a Graduate School. We do not have a graduate school at Washington University, but I believe that such a connection is valuable. It prevents some reduplication in teaching. As he describes it, an important part of his course is given by other departments. We have very little of that in ours except as we invite teachers from other departments to participate. The dermatologist talks about skin diseases around the eye, the radiologist gives us radiology of the eye, and so on. In other words we use extra-ophthalmologic teachers to a certain extent but the same basic courses are not given to a number of different graduate groups as they are in Philadelphia.

The idea of continued supervision and stimulation of the men after the course is finished is certainly a good one, but it has not been practical with us. We lose control of them after the eight month course.

There have been only three or four of our students who have not gone on to residencies, however. It is a great disappointment when they don't, but occasionally we take an older man who has been practicing ophthalmology, maybe along with otolaryngology. He feels that he would like to know more and he is willing to give up eight months to learning more, but he says, "I cannot take a two or three year residency when I finish."

To give them another degree, an M.S. as the Pennsylvania Graduate School does, if you can control their further study, seems a good idea and is a stimulation. I wrote and asked Dr. Spaeth how many go further than the eight months with them, and he replied that there was a fairly good percentage who do so—about 50 per cent, who complete a second year, and a small per cent who go through the third year that he described. I think that is a good idea. In fact, I have nothing but good to say of his course. I have known it for many years and how much it accomplishes. At Washington University we do not require that the students state that they will take residencies after the course. I am afraid that in some of the lean years we might run into difficulty getting sufficient students if we made this a requirement.

I imagine that the work in many places is about the same as the work we give our students. It takes a big staff to do what they are doing in the Pennsylvania graduate course. We have 26 on our active staff and Dr. Spaeth has more than 50.

I am now beginning to wonder whether this type of long graduate course is going to survive or not. This year we had a remarkable falling off in registrants. We are now teaching only 8 men in our graduate course, and Dr. Spaeth wrote me that his number, which had been 30 for many years, was only 23 this year; maybe due to the expiration of the G.I. bill.

One of the problems in graduate teaching is that young doctors don't have the money to finance it. Most of the students are married and many of them have children. We figure it must cost them more than $2,500 to take this course because of the outside obligations. The wives of many of our students must get employment in the university or some other place.

I think the courses are very important for those who take residencies in hospitals where there is no systematic teaching, which is about 50 per cent of the hospitals now, because I do believe the men learn more if it is taught to them in some concrete form to supplement their practical experience.

If a graduate group gets too small we shall find that instructors won't be interested. They are not stimulated by talking to two or three men and you cannot expect them to give the amount of time necessary just to talk to a very small group. I don't know what the future of this type of teaching is, but I believe that such instruction is valuable.

I think we are at the low ebb now because the men who begin coming out of the service next year will have some form of G.I. bill that will help to take care of them financially. Our group cannot be reduced much more and the course continue satisfactorily. Already many courses that started up at the conclusion of the war have closed. I believe there are only about 4 that are still continuing.

Just within the last week we were made aware of another serious threat to graduate instruction, and that is the diminution in the number of clinical patients, especially surgical patients, because of Social Security and old age pensions. It has become difficult in our areas to get cadavers or cadaver heads, because people in their late years are provided for, and if anyone takes any interest at all in them they are taken from the hospital and buried by some relative who may get something from the government through some scheme if he can think of one. So we are having a little trouble getting cadavers, and we find that the indigent patient as we knew him is gradually disappearing from the folds.

Dr. Woods is going to discuss "Clinical Instruction in Ophthalmology with Isolated Courses on Special Subjects." When he was asked to discuss the subject, his first question was "What are you talking about?" When you do not prescribe or have a set-down curriculum then you can pick certain subjects that men will take and carry through the year without having to cover all the subjects.

Clinical Instruction in Ophthalmology with Isolated Courses on Special Subjects

ALAN C. WOODS, M.D.
BALTIMORE, MD.

IN THIS discussion of graduate instruction in ophthalmology, I have been asked to present the argument for bedside clinical teaching reinforced by short intensive courses. By "graduate instruction," I understand the subject to be the informal and formal teaching of the resident staff during their years as intern, assistant resident, and sometimes as resident, immediately following their graduation in medicine. As such, it differs sharply from the undergraduate instruction of medical students, and the postgraduate instruction of already qualified specialists.

In making my plea for a certain type of bedside teaching and certain special didactic lectures, let me make one essential premise. The graduate student, be he intern or assistant resident, is assumed to be an earnest, intelligent individual, anxious to learn, willing to work, and looking to his chief for guidance in mastering the technic of his chosen specialty. If he is not of this type, then he is scarcely worth bothering with, and the sooner he ceases to be a member of the staff, the better for all concerned. Should he be so stupid and lazy, he threatens to undermine the morale of the service by his bad example, he should be gotten rid of at once. If he is a dull plodder, of which there are unfortunately many, then let him be exposed to all the service has to offer, provide him with facilities and opportunities whether he avails himself of them or not, throw him words of encouragement in the hope that he can extricate himself from his mental morass, but if there is not an answering spark, then as soon as he has completed his minimum required training, let there be a parting of the ways. Then turn him over to the tender mercies of the Specialty Board. Whether or not they care to certify him is their problem. But above all, do not formulate the service or pattern the tempo of instruction to his level.

Assuming that we start with good student material, how should the course

of graduate instruction be formulated? Should there be a preliminary grounding in the so-called basic sciences, followed by systematic, graded instruction in ophthalmic symptomatology, diagnosis and therapy, aided and abetted by Home Study Courses? Should primary emphasis be placed on the teaching of clinical judgment and operative technic? Should the unanswered and challenging problems of ophthalmology be accentuated, seeking to inculcate in the young student the seeds of scientific curiosity, to stimulate a thirst for investigation, and to awaken in him a dissatisfaction with old accepted dogma? Or should the course of graduate instruction be a compromise between these extremes, touching on those various phases, opening the door as it were, and thus allowing the student in his postgraduate days to follow whichever road he elects?

The objectives of a properly designed course of graduate training should be the ultimate development of a good clinical ophthalmologist, with sound clinical and surgical judgment, in whom a scientific curiosity has been awakened. With the exceptional man these primary aims are often transcended and there result fine surgeons, brilliant investigators and excellent teachers. The course of graduate training should therefore be one which will guarantee as far as possible the training of a good clinician, and at the same time afford every opportunity for the development and full fruition of the exceptional man.

It is immediately conceded that instruction in the so-called basic sciences is necessary. The basic sciences, as concerns ophthalmology, are inadequately covered in the usual medical course, and many of the special technics of ophthalmology are not touched upon at all. I believe, however, that this basic instruction had best be given in conjunction with clinical training. Only thus can the beginner realize and appreciate the importance and the relation of many apparently abstract formulas and dogmas to clinical practice. Since it is utterly impossible that these courses in ophthalmic anatomy, pathology, physiology, bacteriology, physiologic optics, etc., be completely comprehensive in themselves, they should be largely outline courses, designed to guide the beginner in his reading and study.

It is also obvious that an orderly knowledge of the framework of his specialty—the accepted classifications, etiologies and therapies of the various disease entities with which he must deal—is essential for any properly trained ophthalmologist. Such a framework serves as pigeonholes, in which the embryo ophthalmologist arranges, catalogues, and classifies his gradually acquired clinical observations and experiences. Such orderly knowledge is made to order, prepared, served up, and immediately available in the well-written textbooks of today. To my mind, it is not the function of graduate training to review this material systematically with the young intern. There is nothing to be gained by the assignment of several chapters in a textbook and the review of this material in a seminar. A parrot can be taught to memorize and repeat a chapter from Duke-Elder's text book, but this does not mean the parrot can think. The student can read and understand English as well as the chief-of-service, and it is not the task of the chief to repeat what is already clearly stated, and should be well understood.

Home study courses are undoubtedly of value in regulating the graduate student's reading, and leading him on, one step at a time, as he gradually ascends the ladder of academic knowledge. But their very name—Home Study—clearly implies this is their function. For the moderate student, such courses are

helpful guide ropes, but for the quick, ambitious, and careful student, they may be entangling fetters. I grant such courses are valuable, especially to the intern or first year student. But the good student, the up-and-coming assistant resident, soon outgrows the need of such remote control and hungers for more succulent and interesting provender. It is, therefore, granted that proper instruction in the basic sciences is necessary, that a systematic review of the academic background of the specialty is a ***sine qua non,*** and that in the early stages of such a review the so-called Home Study Courses are of value. But it is maintained that the supervision of such a review is not the function of graduate instruction. It is the week-night task of the student, leaving him his off duty Saturday nights for his carousing and beer drinking.

This brings us to the chief theme—clinical instruction. What is its value, what form should it take, how should it be patterned? It is my firm belief that continued bedside instruction, day in and day out, is the best form of graduate teaching. But by no means do I mean that bedside teaching should be limited to mere clinical instruction in diagnosis and therapy. The ceaseless flow of varied clinical material through the wards, the individual progress of each particular patient through his disease towards recovery or disaster, the problems presented by different disease entities and by the individual patient, the employment and evaluation of special technics and diagnostic aids, the choice of a therapeutic or operative approach—all of these should be made the texts for discussion and instruction. Let such instruction be repeated again and again as the individual problem repeatedly presents itself. Thus the young graduate in medicine follows the patients through an illness, perceives the pitfalls of diagnosis, learns the good and the bad results of therapy and operative interference, and finally wins through to his goal—the acquisition of clinical and surgical judgment.

How should this bedside instruction be patterned? Let us start at the beginning —the presentation of the case. After the new patient has been presented by the senior resident, the intern who has taken the history and who is directly in charge of the patient is questioned. The history is reviewed, phases which seem of importance to the chief-of-service are emphasized, trivialities and false leads are exposed, inadequacies in the history are filled in by direct questioning of the patient, until finally a presumably adequate history is provided. Then comes the examination of the patient — the intern is questioned as to what his examination revealed, this is supplemented in turn by the results of examination by the senior member of the staff, and finally by the examinations of the visiting staff and the chief-of-service. Then comes the discussion of the case. First to speak must be the intern, what is his diagnosis, what does he believe is the indicated course of treatment? Then comes the turn of the other interns and assistant residents. Do they agree or disagree? What have they to add or to suggest? Then, if there is any disagreement or further problems, the seniors are asked to discuss the case. Finally when all views are presented the chief-of-service sums up and gives his opinion and outlines the course to be followed. That such a summing up and judgment may often be somewhat *ex cathedra* is admitted. That it may sometimes be erroneous is also admitted. But if so, often so much the better. The same case is seen day after day by the same group until discharge. Errors in the *ex cathedra* judgment become apparent, and it is an incontestable fact that the staff learns as much, and often even more, from the mistakes and er-

tors of the chief than they do from his vindicated judgment.

The final discussion by the chief and the staff offer the finest opportunity for graduate instruction. Here, with the actual patient and disease entity as the text, the chief can review the historical background of the disease, can point out the salient facts in the history and clinical examination, can discuss the various therapeutic and operative approaches, can outline the problem presented, can summarize and discuss recent investigations, can point out the huge vistas of our ignorance and can discuss what possible investigations might be undertaken to throw some light into the darkness. This is a large order, but it need not all be done in one session. Certain phases may be mentioned, and assigned to some member of the resident or visiting staff to study, summarize and present on next ward rounds. Often the chief may be caught unprepared. Then he too must admit his ignorance, or forgetfulness of what he should know, and go scurrying to the library, to study the literature and recent developments on the particular subject, and so make amends to his staff at the next meeting. There is no shame to the admission of ignorance or forgetfulness. There is shame in bluffing and in the concealment of ignorance. Moreover, one is sure to be found out.

But clinical bedside teaching, instruction in the basic sciences, and home study are still insufficient for the training of an ophthalmologist of today. Even the most modern of textbooks are of necessity two years out of date. Medicine is marching quickly these days. One has only to consider the tremendous developments of the last few years, the resurgence of specific chemotherapy, the introduction of antibiotics, the sudden crystallization of hormonal therapy, and as an example of change of thinking in a single disease entity, the altered ideas on the pathogenesis of diabetes, the division of the disease into insulin, deficient and hyperglycemic phases and the relation of this concept to diabetic retinopathy. The textbooks are close to silent on these significant advances and in the effort to cover all phases of ophthalmology, are singularly defective in many particulars. Moreover, one cannot control the flow of clinical material. The wards may be overrun with cataract and glaucoma patients, only certain types of endogenous ocular disease may be available to serve as texts for instruction and there may be a sudden dearth of material on highly important subjects. The fluctuations and resulting deficiencies in available clinical material, and the inadequacy of textbooks must be compensated for by advanced didactic teaching. Call these advanced didactic lectures what you will, the term "short intensive courses" was assigned to me to defend. I should prefer the term of Lectures on Medical Ophthalmology. But this makes no difference. The one great danger of such a course, a danger that must be avoided, is that the lectures become static. The material presented must be ever-changing, as new topics arise and as new developments are made. Such a course was first offered at Johns Hopkins some twelve years ago. Today the topics of the various lectures are almost completely different from those when the course was first ordered. As textbooks catch up, old subjects should be discarded and new subjects introduced. While such lectures are designed chiefly for the staff, straight graduate instruction, they can also be opened as electives for undergraduate students, and it is amazing how popular they become, how they stimulate interest in ophthalmology in medical students and even among our colleagues in other branches of medicine. Examples of the subjects discussed at present are: "The Pathogenesis and

Modern Treatment of Ocular Tuberculosis," "Ocular Syphilis," "The Influence of Hypersensitivity and Immunity on Ocular Disease," "Vaccine Therapy," "Antibiotic Therapy," "Adrenocortical Hormonal Therapy," "The Ocular Changes of Thyrotoxicosis, of Diabetes, of Brucellosis, of Sarcoidosis, etc." There is no dearth of subjects. The two important things are to keep the material of the individual lectures up to date and to change the subjects as old themes become static and take their proper pigeonholes in the accepted literature and textbooks.

One word on instruction in operative technic. Surgical judgment, by far the most important phase of ophthalmic surgery, should be covered in the ward-round discussions. Niceties of surgical technic can be mentioned, but must be demonstrated at the operating table. Here nothing can take the place of the old preceptorship system. The neophyte begins as the scrub-up man and observer, later graduating to assistant, and finally becoming an operating surgeon in his own right. Care must be taken in his assignment as assistant. First he should serve an apprenticeship as assistant to the senior assistant resident in minor cases, later to the resident in major cases, and then as assistant to the members of the visiting staff and to the chief and finally become an independent operating surgeon. Through each step, it should be remembered that the assistant is a student, the variations in technic and variations in technical maneuvers should be explained, and discussed at the end of operation. By serving thus under a succession of different surgeons, the young graduate student learns what to accept and to reject, and finally, with accumulating experience of his own and a developing sense of judgment, wins through to be a competent surgeon in his own right. And, I may add parenthetically, since his eye is keener, his hand is steadier, as his judgment matures, he becomes a finer surgeon than his aging instructors. Make no mistake, under proper instruction, with adequate training, ophthalmic surgery is one field where youth is served and there is no premium on age or senility.

Thus I believe that the foundation of graduate teaching should be bedside teaching, reinforced with lectures and seminars on special subjects. We should always be teachers and never schoolmasters. Our pupils of today are our masters of tomorrow. We have only one advantage over them, our experience. They have countless advantages over us. We should present to them the fruits of our experience, which is all we have to offer. We should realize that their medical education is vastly better than was ours. There is no reason for us to pontificate, but rather it is our task to lead the discussion, to guide their minds, to open up to them unknown vistas, which we shall never attain, but which they well may. Thus by presenting to them what we know, what we believe, what we hope, having no shame for our ignorance, they in turn:

"May use our thoughts and forms as steps to rise,
To speak at last their individual word,
The free result of all things seen and heard."

F. Bruce Fralick, M.D., Ann Arbor, Mich.: Dr. Woods has presented a scholarly discussion of the resident's clinical instruction in Ophthalmology. It is evident from the papers of Dr. Woods and Dr. Spaeth that all clinics training ophthalmologists will not be able to train their men in identical manner because of variations in clinical facilities, interests and quantity of permanent staff and even the number of staff members being trained.

I think that most of the residencies in the country have relatively small staffs and thus a great burden is placed on them when formal as well as clinical instruction is undertaken. With the larger permanent staff there is a likelihood that each member has some phase

of ophthalmology which especially interests him. This makes it much easier to cover the field of clinical instruction without its being burdensome to anyone.

The clinic at Ann Arbor stands midway between the large and small clinics. There is adequate teaching material but only three permanent staff members. We find in our situation that we are presented with a tremendous task to teach a yearly class of 200 undergraduates and to supervise and teach 9 residents; especially since the 3 permanent men are on half-time basis. The constant pressure on the permanent staff, both in their half-time private practice and half-time with the University, makes it necessary to utilize the services of the other departments in the Medical School for at least half of the basic teaching of residents.

In our three-year residency we are following much the same program given us by Dr. Woods, namely, that of a progression of status in the clinic as competence is demonstrated. The resident starts with the simplest duties, such as taking the history and determining visual acuity. From these elementary duties he progresses through the various methods of examination to the making of a diagnosis and recommending and executing therapy. Such a program has to be adhered to rigidly and has to be policed by the permanent staff at all times. To do so requires the presence of a permanent staff man in attendance at the clinic throughout the day. Since our clinic runs five full days a week the clinic is covered by at least one senior staff member during this time.

Admittedly such coverage is not possible in all residencies. Either the visting staff shows disinterest or they have allowed their private practice to keep them away on their assigned days. If an ophthalmologist accepts a position as permanent staff he should set aside a prescribed period to be devoted to the clinic so the trainee may have free consultation with his superior on every problem as it comes up.

The second factor which I think is very desirable in the clinical instruction of the resident staff is free consultation with other divisions of the hospital. Ophthalmology is becoming more and more recognized not as an isolated specialty but as an expression of general disease. Free exchange of patients between divisions of the hospital results in a tremendous number of varied conditions seen by the resident who then better appreciates the ophthalmologic implications in general disease. If possible, close association should be sought especially between neurology, neural surgery, pediatrics, dermatology and internal medicine.

I feel that it is very necessary for the Ophthalmology Department to be closely tied with the laboratory divisions such as pathology, bacteriology, and so forth. The resident is going to be far better trained if he is able to see the enucleated eye under the microscope, thus permitting correlation of the clinical and pathological findings.

The basic science courses are of necessity very didactic in character. Too often they are given to candidates before they have had any ophthalmological experience. I agree with Dr. Wood's statement that they are usually given at the wrong time. We ask our residents to take the Home Study Course during their first year of residency. It stimulates reading and forms good reading habits. It teaches them the value of the library and is an excellent preparation for the basic science course and clinical experience the following two years. During the second and third years our residents register in the Graduate School for their Basic Science Course in Ophthalmology. Twelve hours of graduate credit must be obtained in cognate fields and twelve hours credit in ophthalmology.

Too often the individuals giving the eye courses in cognate fields have no concept of what we as ophthalmologists need to know. We have found it advisable to have our permanent staff give supplementary courses covering the clinical applications of embryology, anatomy, neural ophthalmology, and so forth. Such clinical applications make these live subjects which the resident can use in his clinical experience.

It is my feeling that if a hospital is going to offer a resident training program, the permanent staff must be willing to give that program sufficiently of their time to make it produce ophthalmologists of an increasingly superior grade as the years pass by. A static program will soon turn out trainees who are not qualified to pass the examinations.

Immediately after the war there was apparent the need of a course to take care of the large number of men who wanted instruction in ophthalmology. Dr. Lancaster saw this need and established what was intended to be an intensive course in training men who

could not find locations in the United States. It is rather fortunate that we have waited until this time to discuss the Lancaster Course. Dr. Regan, who has been associated with it for a period of years, has consented to discuss it this morning.

Intensive Short Courses Such as the Lancaster Course

JAMES J. REGAN, M.D.
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INASMUCH as this paper will be, for the most part, simply a chronicle of two approved Short Basic Courses, and my personal observations relating to them, I must preface my remarks with an apology for use of the personal pronoun.

Except for a few postgraduate lectures in ophthalmology in the Spring of 1915 in Boston, my first serious introduction to the specialty was by the back door route, viz., clinical ophthalmology. I was invited to assist the instructor in Ophthalmology and Otolaryngology at the United States Naval Medical School in 1918. The need for knowledge of basic science was apparent almost immediately, and became more keen as a result of occasional sojourns from Washington, D. C., to Baltimore.

The Surgeon General of the Navy designated me for four months postgraduate study at Washington University, St. Louis, in May 1920, where, through didactic lectures and clinical instruction by an excellent faculty (in their offices, as well as at the University and Barnes Hospital), I learned more clinical ophthalmology. During my stay in St. Louis I was introduced to Ophthalmic Pathology by Harvey Lamb, and to the art of subjective refraction by Drs. William E. Shahan and Frederick E. Woodruff.

I spent most of the following year as clinical assistant at Wills Hospital and Pennsylvania Hospital, Philadelphia, and I neither heard nor read much of the basic sciences related to ophthalmology until I became a clinical assistant on the service of Dr. Walter B. Lancaster at Massachusetts Eye and Ear Infirmary in the Fall of 1921. (Basic sciences were not a part of the curriculum of Harvard Medical School, nor of the Infirmary at that time.)

From then on I was exposed to a "continuous course" which ended last December 9th; in the Clinic, the operating room, during lunch or dinner, driving to Hanover, New Hampshire and on trains to medical meetings.

Because of Lancaster's influence, more than anything else, I felt obliged to exhort young men manifesting an interest in ophthalmology to try to obtain some knowledge of such basic subjects as anatomy, visual physiology, and physiologic optics. The only course given in the last of these, available in New England at the time, was at Massachusetts Institute of Technology. The only postgraduate course given at the time which included the basic sciences, of which I had any knowledge, was a long course given at the University of Pennsylvania.

THE HARVARD COURSE

In January 1934 I was appointed Ophthalmic Surgeon-in-Chief, Boston City Hospital, and my first concern (after the care of patients) was adequate training of residents. A course of lectures was established immediately with the enthusiastic support and participation of most of the ophthalmologists of Greater Boston, but, save for a series of lectures (with lantern slides) by Dr. Theodore L. Terry on pathology, and some lectures in optics by Lancaster, the subjects covered were on clinical ophthalmology.

I can recall vividly the first months of service by new residents during my first five years as chief. It might be said of them, with one exception, that they didn't appear to know the right eye from the left. The visiting staff, too, had a feeling of inadequacy. Printed prescription blanks for empirical therapy were initialed, and handed to most patients, day after day.

Then the big day came—the Staff of the Howe Laboratory for Research in Ophthalmology of Harvard University inaugurated a Short Course in the basic sciences, from October 1st to December 23rd, 1938, at Massachusetts Eye and Ear Infirmary. The class was limited to twelve. The plan was to admit only students who were to serve residencies. Within a few days I contacted all my appointees and assured them that this course would benefit them as much, or more than an extra year of Clinical Ophthalmology.

From that time on it has been pleasurable and profitable (scientifically, of course) to be Chief of Service. Residents were confident and self-reliant. They must have learned a great deal about the clinical application of many subjects taught in the basic course.

Following the close of World War II, the Harvard Course was extended from three to five months. During the last two months the student was introduced to Ophthalmic Instrumentation and Refraction at the Massachusetts Eye and Ear Infirmary. This must be of great value, not only to future residents and their patients, but to preceptors and hospital staff members.

Replying to Dr. Cogan's paper[1] on the "Aims and Aids in the Teaching of Basic Sciences in Ophthalmology," Dr. Alan Woods had this to say,[2] "In many instances, such a course in the basic sciences would be the one opportunity of such interns to obtain insight into basic scientific ophthalmology. Even though the prospective ophthalmologist may be better grounded in the basic sciences than his future preceptors, and so be liable to a rude awakening when he begins his actual clinical training, nevertheless, the general level of ophthalmologic practice will be considerably raised by this program."

The staff at Boston City Hospital have encouraged residents who have had some basic training to give us the benefit of the "last word," especially in bacteriology, pharmacology, biochemistry, neuro-ophthalmology in the clinic, and anatomy and physiology in wards and operating room.

THE LANCASTER COURSE

To properly evaluate the course established by the Ophthalmological Study Council — and it was properly named because fifty or more recognized teachers of ophthalmology from all parts of the country lent their names to its establishment as Executive Officers or Advisory Members — the profession should be reminded of a few facts.

World War II had come to a close. The younger medical officers who knew what they wanted (apparently well advised), were writing to The Board of Ophthalmology asking where they could get an approved course in the Basic Sciences, and reminding the Board that they had received replies from deans of all schools where such courses were given at the time that, although the student enrollment had been increased, in some cases 100 per cent (Harvard increased its student load from 15 to 30), they could not be accommodated. This was too much for Dr. S. Judd Beach, then Secretary-Treasurer of the Board.

When he came to Lancaster, who spent most of his life preaching and

teaching Better Preparation for Clinical Ophthalmology, he got the answer. "If existing facilities aren't adequate, plan a course to take care of all, and give a course, with a faculty whom you and I know to be competent."

I won't bore you with the mechanics of establishing such a course, but simply mention that the matter of incorporation in Massachusetts as a nonprofit organization might have been difficult for anybody but Lancaster. Sponsorship by the Surgeon General of the United States Army and Public Health Service seemed no problem. The approval of the Veterans Administration was received without delay, and what remained was to secure facilities. This the Massachusetts Medical Society furnished in their palatial building at 8 The Fenway, in the heart of the Hub.

Lest anyone of you plan a similar experiment, you might be interested in these few facts. First, there must be a crying need. During 1943-1944 and 1945 the office of the Secretary of the Board of Ophthalmology was deluged with letters requesting information about available facilities for postgraduate training in the basic courses and specific ophthalmologic subjects. These letters came in at an average rate of about twenty a week (sometimes as many as fifty a week), and came especially from medical officers then abroad and about to be sent back to the States. They were all answered and referred to the list published semiannually by the Council on Medical Education and Hospitals, but they met with the same reply, i.e., that all available places were filled as far ahead as 1949 in some schools, most of which were understaffed with their teachers still in service. Besides, many schools were committed to take back those students and residents called into service during their courses and residencies.

After Lancaster and Beach (both World War I veterans), (and patriotism was running high at that time), agreed that there must be a course available, they consulted Dr. Terry, Dr. Gundersen, and undoubtedly others. Dr. Terry planned most of the curriculum, and Lancaster, Beach and Terry pledged $5,000 each to finance the course. It was planned to give the course once, after which time its value to the future of American Ophthalmology could be determined.

In closing I would like to say that the first course in Boston was purely basic as planned, but most of the seventy-five students prevailed upon Dr. Lancaster to give some refraction because they thereby could serve their preceptors better (those not assured of residencies). He finally agreed, and Dr. Burian and I gave the class three hours a day each for two weeks in Refraction and Ocular Motility, theoretical and practical instruction, in the Amphitheatre of the Mallory Institute of Pathology of Boston City Hospital, using as subjects, patients from the Hospital, and members of the class. The reaction from preceptors and chiefs of eye clinics where students later served as residents convinced Dr. Lancaster that these clinical subjects should continue to be included as part of the Course.

While the first two classes were made up chiefly of neophytes, subsequent classes had a large group of experienced, well-established ophthalmologists, many of whom had served residencies. The latter found the summer months the only time they could spare to give to a "vacation" in Maine. The tempo of the course permitted little vacation save from hospital and office routine, and examinations held at the conclusion of short subjects, and weekly on longer ones, precluded even carefree week-ends.

In conclusion may I say that the most heartening reaction to the first Lancaster Course came from experienced clinicians with whom some members of the class were serving as residents or preceptees. They were honest enough to admit that they themselves had learned, after years of frustration, the art of clinical refraction from their students. Most of them had given it up, or were about to.

The Lancaster Course is not designed to give adequate preclinical instruction to future Professors of Ophthalmology, but, while some students may eventually become professors via intrigue and their continued interest, the Course is designed mainly to raise, as Alan Woods said, the general level of ophthalmologic practice.

I have been so close to the Lancaster Course since its inception, that I have come to regard it as an All-Star Performance which already boasts of about 600 enthusiastic alumni. It supplies a need regarding time and season which should appeal to industrious students, and I feel the course should be continued as long as there is a demand for it.

REFERENCES

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2. Woods, Alan C.: Editorial, Arch. Ophth., 37:536-538 (April) 1947.

DERRICK VAIL, M.D., Chicago, Ill.: Dr. Regan's exposition of his pilgrimage from his early days in ophthalmology to his pre-eminence reflects the period of education in ophthalmology that most of us encountered. Not to make this personal more than just a few remarks, let me say that during my residency at the Massachusetts Eye and Ear Infirmary there were no formal or even informal discussions.

In all the subjects under discussion this morning, it comes down fundamentally to the character and personality, the integrity and the skill of the individual teacher, the teacher you are working with. I would give everything I have for the years of work with Fred H. Verhoeff as a preceptor and professor of ophthalmology during my residency in the Massachusetts Eye and Ear Infirmary. The shadow of a great teacher reflects itself on many men throughout their lives. The impressions of the student early in his career are gained by the stature of his teacher, and I am sure that the phrases one uses and the approach to clinical problems that one encounters, carried out throughout one's life, reflects on one's teacher.

Now, to talk about the Lancaster course, there are undoubtedly advantages and, on the other hand, a number of serious disadvantages to such a course in my opinion.

What are the advantages? The advantages are that it gives a quick review of ophthalmology, and it has to be a quick one because one naturally cannot encompass thoroughly such an intricate subject in all its details as ophthalmology in a short course, whether it is a short basic course with some clinical subjects or strictly a basic course without clinical subjects.

The problem of economics which Dr. Post discussed needs no further comment on my part. Dr. Post has covered that phase of it and it is, as we all know, a most serious one. It is, therefore, all to the good that there is such a course as the Lancaster course available for these men who cannot spare the time or the money to take a long, basic course in ophthalmology.

The disadvantages are first that to the neophyte, as Dr. Regan mentioned, it is a speedy introduction to ophthalmology. It is like throwing a packet of fifty thousand stamps onto the lap of your son and saying, "Make a collection of these stamps." After pasting a few of them in his album he gets discouraged and probably gives up the thought of completing the album. When you pour into the neophyte, one who is not familiar with even the lingo of ophthalmology, with our own peculiar lingo—when you pour it into him very fast, it is obvious that he cannot absorb it to the best advantage. On the other hand, if such a course is designed as a refresher for the resident who has finished his residency or has partly finished his residency or, better yet, for one who has started in

practice and needs to get away for a while, such as Dr. Regan has mentioned in his paper, then it is obvious that it is exceedingly valuable.

Again let me get a little personal in saying that after finishing my residency at the Massachusetts Eye and Ear Infirmary and starting out in practice, I realized very quickly my shortcomings and I went to England to take a basic course or the short course in ophthalmology given in Oxford for the diploma in ophthalmology. I learned an enormous amount of things there, many of which were basic but unfortunately I had not learned them before and they were of great value in my training. So that a course like the Lancaster course does have value.

The chief disadvantage that I see of such a course is that the neophytes, the beginners in ophthalmology, and even the residents who have finished their residencies and have taken it, look on it as a prerequisite for the American Board of Ophthalmology. I received a letter not long ago from a candidate to the Board, who was asking about the course. He understood it is one of the ways of getting in to take the examination and furthermore, passing it, and that taking the Lancaster course was almost an essential requirement for success in the Board. It gave me the unpleasant feeling that perhaps this is looked upon as a tutoring course, which, of course, Dr. Lancaster did not consider it for one minute to be. That is the real danger of the Lancaster course, that it is becoming a tutoring quickie like Reader's Digest or like the Review of Duke-Elder's five volumes which I understand has been published as a sort of pony for ophthalmology.

How can this be avoided? Well, of course, I don't think it can be. It is the nature of the course. Certainly all of us owe a great debt of gratitude to Dr. Lancaster, Dr. Terry and Dr. Beach for the establishment of such a course. It was a welcome relief to those of us who were establishing our own courses in universities throughout the country to have the Lancaster course to fall back on when disgruntled and unhappy applicants could not be placed in our own courses. It even now is a great benefit to those of us who have had to discontinue our courses because of lack of applicants to be able to refer the applicants—to the non-existent course at Northwestern at the moment—to the Lancaster course as a method of getting some training in ophthalmology. But I do believe it has great shortcomings, and I don't have the answer at the moment nor do I ever expect to have the answer for correcting these shortcomings.

There is no question that the men who do take the Lancaster course do better on the average in the Board examinations than those who do not. I should probably say that with some reservation because I haven't gone into the statistics carefully. But in checking over the examination held just last week, roughly of those who had taken the Lancaster course, which does not mean all the candidates, of course, more than 80 per cent passed.

One reason the candidates to the Board may have the feeling that the Lancaster course is a prerequisite for success in passing the examination is the fact that the course utilizes, or it has in the past, the services of individual members of the Board as instructors. That is not a bad thing, but it could be misinterpreted and give the impression that there is an effort to obtain members of the Board as the teachers and lecturers. That, of course, is not to be condemned, since most of the men on the Board are now teachers.

In the whole matter, then, of graduate and postgraduate education in ophthalmology and in listening to the papers this morning one can sum up by saying, as I said when I started, that the success of a program reflects the greatness of the individual teacher.

It would be a mistake if we did not again call attention to the fact, which Dr. Alan Woods has already done, that the instructional courses of the Academy are on the most modern phases of ophthalmic medicine. Sometimes in these instructional courses you get things before they are even thought of. On the whole, however, they have been very well carried out.

Before closing I should like to call attention to one thing. Last year we discussed undergraduate instruction. Since that time we have had some reports on undergraduate instruction as done by faculties in ophthalmology. I am sure that if the reports on undergraduate instruction in ophthalmology as given to us were all true every medical student should graduate as a fairly full-fledged ophthalmologist. But the fact is that aside from the instruction given by the

ophthalmic division in the medical school, undergrdauate instruction in the eye is almost negligible. Very little is said about the eye in other divisions of medicine. We are slowly gathering the facts by paying students 50 cents a page for every page of eye notes they turn in to us. Last year one of the girls who was taking notes for us said there were not enough to make it worth while and she would not charge us. There is little instruction in ophthalmology other than by the division of ophthalmology.

This brings out a very important point that isn't generally thought of; that is, there is overinstruction in medicine and general surgery. Future thinking in medical schools must be that our instruction to the undergraduate must be for a two-year period and then perhaps it can be divorced from general medicine and go with the specialties, so that we can cover all the material that is now available. There should be ophthalmic schools of medicine rather than turning out rafts of general men. But that is far in the future. There is tremendous opposition to it in the medical schools because the heirarchy who run them think they have to go along in the even tenor of their ways and they don't want to think about the future. However, those of us in this organization certainly can develop our own methods of education as we have heard this morning. Of importance, of course, are the instructional courses of the Academy.

TEACHERS' SECTION IN OTOLARYNGOLOGY

October 12, 1952

LAWRENCE R. BOIES, M.D., *Chairman*

LAST year we ended our meeting promptly at twelve o'clock noon and we expect to do so today. Dr. Meltzer had just finished presenting his paper, "What Should the Clinical Otologist Do with 'Audiology'?" I knew that a number of you would want to discuss it, so we carried that over to this year. Dr. Frederick Hill has commented that this may make some sort of medical history, in that it is probably the first time that a discussion of this type has been carried over from one year to another.

I am going to ask Dr. Meltzer to summarize briefly his paper of last year.

DR. PHILIP E. MELTZER, Boston, Mass.: Mr. Chairman and Gentlemen: The title of the paper read last year was "What Should the Clinical Otologist Do with 'Audiology'?"

I made an effort to distinguish between the research audiologist, the clinical audiologist and the audiometrist, and to define the relation of each to the otologist.

The relationship between research audiologist and otologist is clear. The association between the two should be a close one, and the research audiologist should be welcomed into our special societies. We should encourage and support his researches. From this cooperation mutual benefits would result.

The audiometrist is an adjunct to the otologist; his position is well defined.

Less well defined is the role of the clinical audiologist. The man to direct an audiology or hearing center is the man best prepared to do the job, whether he is an M.D. or a Ph.D. Most M.D.'s are not qualified, or even interested in directing the over-all service of such a center. The clinical audiologist, for his part, is trained to deal directly, personally, with the individual patient requiring rehabilitation. The otologist must learn to appreciate how competent the clinical audiologist is in rendering such service and join with him in helping the patient adjust to the social and economic demands that will be made of him. The otologist must learn that his medical service does not end with the diagnosis, that there is more to the education and rehabilitation of the deafened than he is aware of.

I am definitely in favor of cooperation between the clinical otologist and the competent audiologist. I have no fear that the clinical audiologist may encroach upon our specialty.

CHAIRMAN BOIES: I have asked Dr. Frederick Hill and Dr. George E. Shambaugh, Jr. to open the discussion of this paper. I know that each of these gentlemen has a deep interest in this subject.

DR. FREDERICK T. HILL, Waterville, Maine: Dr. Meltzer first differentiated audiologists into three groups: the doctors of audiology, the clinical audiologist, and the audiometrist. He paid deserved tribute to the research audiologist, generally on the Ph.D. level, living somewhat in the stratosphere; and, coming from Boston, I was rather surprised that he did not imply a speaking acquaintance limited to the Lowells and Cabots.

Next he described the clinical audiologists as those engaged in education in

the fields related to hearing impairment, as well as those concerned with hearing aid evaluation and audiometry. He termed these, most aptly, the practical workers in the field and stated that their talents were indispensable.

He referred to the audiometrists as technicians, qualified in audiometry, with limited training but able to render valuable service.

Then he considered the otologist, stating that he was primarily interested in diagnosis and treatment and too often not abreast of modern developments in rehabilitation of the deafened. He felt that the otologist, "if he practiced his specialty as it should be practiced," should refer his patients to the clinical audiologist "for those services which he could render best." And he stated that these special services could best be integrated by the establishment of rehabilitation centers, either publicly or privately supported. He would not quarrel over who directed such centers, but rather felt that this should depend upon individual qualifications.

I fail to see how anyone could take issue with anything Dr. Meltzer has said. I do feel that the clinical otologist is more interested in and has more contacts with the practical workers described as clinical audiologists. We know very well that we can do little about the research audiologist except to accept gratefully the many contributions he may make to our work. Likewise, I cannot quite see a definite demarcation between the clinical audiologist and the audiometrist, nor do I feel this is too important. Again isn't it a matter of individual qualifications? There is a certain danger in too much regimentation, in setting up too rigid standards of classification, which may defeat its own purpose. Witness what is happening in the nursing field today, and is threatened in medical technology.

To me the most important part of Dr. Meltzer's paper is the well-deserved criticism, subtly disguised, of the clinical otologist who so often fails to interest himself in the field of rehabilitation. When confronted with a patient with irreversible hearing loss, he should be expert enough to recognize it and be capable of offering the proper advice. What needed service he may be able to offer may well vary, depending upon the facilities available; but these often may be developed and expanded if he employs a little initiative and ingenuity. And he certainly should know what is available.

There is a peculiar connotation to the term "rehabilitation center," which carries a sort of psychological price tag, implying unlimited resources. This may tend to discourage the development of services on a more modest basis, thereby depriving many unfortunate persons of needed help.

It has been said that in medical research all that is needed is one patient and one physician, provided that physician possesses the inquiring mind. We might well have a rehabilitation center with one capable teacher of the deafened and one otologist, provided he will interest himself in those phases of audiology which are of clinical importance and should be within his capabilities. This may not be the ideal but at least it would be preferable to doing nothing. I care not what we call our co-worker, clinical audiologist, instructor, special educator, or just plain teacher, as long as she can do her job.

I think we might paraphrase Dr. Meltzer's summary by saying that Audiology is a valuable and necessary partner of Otology; that cooperation and cohabitation will be productive of much good and that we'd better marry the "gal" and make this progeny legitimate.

DR. GEORGE E. SHAMBAUGH, JR., Chicago: Dr. Meltzer has brought up a very timely subject. Our specialty is changing so rapidly that unless we go to school almost continuously, it is hard to keep up with the changes. I, for one, think the changes are for the better.

I think the reconstructive maxillofacial and nasal plastic surgery which we are learning about and the reconstructive surgery for deafness is far more interesting and beneficial to the patient than the surgery for infection which we used to spend our time doing.

Audiology is one of the aspects of our specialty which is very rapidly developing. For the last four or five years at Northwestern we have put on a small course in audiology and endaural surgery to try to help otologists keep up with the changing aspects.

This year, because of the increasing interest in audiology, we concentrated the audiologic part in the last week of this one-month course and opened it to other otologists who were not taking the endaural part, and, to our surprise, we had quite a large number of otologists come to take this audiologic work. I was surprised at how much interest there was in audiology among practicing otologists.

At Northwestern we have a strong school of speech including a department of audiology, Dr. Carhart being the head of this department. He feels very definitely that audiology clinics should be under the direction of the otologist, and he is very ready to take a second place to the otologist in the direction of these clinics. He thinks, psychologically, the patient should feel that he is primarily under the care of the otologist.

This has a very practical importance in the making of earmolds, which ideally should be under the direction of a physician. A doctor on whom I did a fenestration a few years ago needed a little additional hearing. He went to a hearing aid dealer, and the dealer filled his fenestration cavity with plaster of paris. We had an emergency call from this physician. He was in agonizing pain as the plaster of paris expanded as it hardened. We had to take him to the hospital, give him complete anesthesia and spent not one hour but several hours removing the mass from the fenestration cavity. He said he was going to sue the company. I do not know what happened. But this is what can occur when audiology is not under the direction of the otologist.

I think the otologist should remain at the helm in this program. The otologist cannot do all audiology himself because he is not trained to do it nor does he have the time.

I think Dr. Meltzer's division of audiology into the research audiologist and the clinical audiologist is a good division except usually it will be, in a university at least, in the same person.

What can the audiologist do for the otologist? The otologist must make the diagnosis in the first place. The audiologist is not competent to diagnose what type of deafness it is and whether or not it is a condition which can be alleviated by simple measures.

We see at least one or two patients a year who wear a hearing aid but who have nothing wrong with their hearing but impacted cerumen. Obviously, the audiologist is not competent to diagnose that or take care of it. The case should be primarily under the care of the physician. The physician must make the diagnosis. He must apply whatever medical treatment can be applied.

In our experience we have found that approximately 40 per cent of patients coming to us with hearing impairments have something that can be helped medically; at least there is a chance of helping them medically. So, I think it is very important that the otologist be at the head in this program.

When the otologist has completed what he can do for the patient and the patient still has a handicapping impairment, then we need the help of the audiologist for rehabilitation.

The otologist should determine by his hearing tests, which should include not only pure tone testing but speech and discrimination testing, whether or not the patient is a good hearing-aid candidate. If he is, he does not need any elaborate program of hearing aid fitting. We can send him to a reliable dealer, and almost any of the accepted makes will give him good results.

If we decide from our tests that he is going to have special problems as a hearing aid user, we should refer him to an audiological center where he can get a hearing aid evaluation. This will include tests with the various types of aids to see how much benefit he can get from a hearing aid, and which particular one will give him the best results.

The otologist also should be able to know whether the patient should have lip reading lessons. Actually, any patient with a hearing impairment, even a slight impairment, is benefited by lip reading, and unless he is an older person, with poor eyesight, I think lip reading instruction should be advised, especially if there is a chance of progression. Speech conservation is very important in people with profound defects, and the audiologist, of course, is the person trained in the technic of teaching the patient to conserve good speech.

Auditory re-education with the hearing aid is very important, something that has thus far been much neglected. This, again, should be under the supervision of the audiologist. The otologist should be interested in it; he should know what it is. He cannot give the lessons; he does not have the time nor the training, but he should know what it is, and he should know where it can be obtained.

I would like to summarize that the practical aspects of this for the otologist are that he should, in his locality, determine where a patient can receive these special diagnostic procedures which the audiologist has helped to develop, and the rehabilitative procedures which the audiologist can administer.

The American Medical Association is preparing a directory which will inform the otologist of these centers. Is that right, Dr. Canfield?

DR. CANFIELD: That is right.

DR. SHAMBAUGH: So all of us may know where the facilities are available as closely as possible to our office.

CHAIRMAN BOIES: Thank you, Dr. Meltzer, Dr. Hill and Dr. Shambaugh.

This subject is now open to general discussion.

DR. EDMUND P. FOWLER, JR., New York, N. Y.: I wish some of the speakers would talk about what they think could be done about teaching audiology to medical students. In my opinion we should start exposing our medical students to basic audiology in the third year, so that when they go into pediatrics, neurology, neurosurgery, psychiatry and general medicine, they have some idea of what can be done for the deafened patient.

DR. THEODORE E. WALSH, St. Louis: I want to emphasize what Dr. Shambaugh has said and disagree very strongly with Dr. Meltzer about who is chief of an audiologic service. I think there is no question at all that the otologist must run that service.

As Dr. Shambaugh has pointed out, the otologist has not the time nor the training to do the routine work in an

audiologic clinic, but he must direct it. I think that is extremely important, and I think that no patient should ever go through an audiologic clinic without having been seen, diagnosed and referred by an otologist.

I made that statement last year at the Conservation of Hearing meeting, and I want to emphasize it again and again.

I believe that the good audiologist and the good audiologic clinics will insist, when a patient comes to them for advice about a hearing aid, for example, that he first go to his otologist; and for very good reason, because the diagnosis of deafness alone is not sufficient. What causes the deafness is much more important.

I quoted a case last year that bears on this subject. It was about a young boy with a conductive deafness which could have been helped with a hearing aid. He was presented to me for evaluation one day by the students in the clinic. His audiogram and speech tests were typical of otosclerosis. Both middle ears, however, were full of fluid. He could easily have gone along wearing a hearing aid for the next twenty-five years, when simple paracentesis restored his hearing to normal in a matter of minutes.

Dr. Fowler has mentioned undergraduate students. I, too, would like to remark about this. I think, as teachers of otology, we must inform our students about deafness at the undergraduate level. The methods of testing should be discussed in some detail.

It is important that the general practitioner know something about deafness, for he is the doctor who is first consulted about any difficulty.

Dr. Jerome A. Hilger, Minneapolis: Discussions of audiologic subjects in recent years have been presented by and from the viewpoint of research and teaching otologists and audiologists. The majority work in or are associated with otologic centers. These orbits satisfy the needs of considerably less than 5 per cent of the hearing disabled patients of the country.

In medicine there has always been a long lag between the creation of new technics and knowledge and their general utilization. Better communication as in later decades tends to a laudable reduction of this lag. There is little tenable reason for recent audiologic advance to be restricted to a limited number of centers. It should and could be disseminated rapidly if we included that desire in our curricula at the centers.

A famous surgeon once suggested: "Give me an intelligent girl for a year and I will make a first class nurse of her. And that is better than spending five years making a second class doctor of her." In the same vein it is difficult to see objection to taking an intelligent girl for a reasonable limited period of time and training her in the necessary technics to render her an able audiologic assistant. Her value to a busy otologist or small group of associated otologists would be inestimable. Not only could she aid in the testing and evaluation of hearing under his direction, but in addition she could maintain liaison with the local hearing society, with the hard of hearing preschool children, and, through the adjustment period, with the new purchaser of a prescribed hearing aid. Thousands of likely locations exist for such girls if the latter were available. They are not largely because in our centers we tend toward higher degrees of specialization and differentiation.

A medical school attunes its program to serve the people's needs with able general practitioners primarily and with restricted specialists secondarily. We should at this early stage in audiologic

development envision a program that will care for the 95 per cent. We should not narrow our vision in audiologic consideration to the point at which a minuscule number of exceedingly advanced audiologists necessitate our concern if their status be one of complement to otologists or substitute for otologists.

DR. SHIRLEY H. BARON, San Francisco: I just wanted to say, in response to Dr. Hilger's remarks, that, in San Francisco, we do have a Hearing Center that takes care of the other 95 per cent of the doctors.

It is located at neither of the two medical schools (Stanford University Medical School and the University of California Medical School) which are in San Francisco. Both schools, however, have representation on the Hearing Center Committee and the physicians of both schools give the Center their support. The Center is directed by a man (a Ph.D.) under the guidance of the Hearing Center Committee.

This is a community service not only to the doctors of San Francisco but to the Bay area and the surrounding cities. If any of you are interested in our plan I should be glad to tell you about it privately.

DR. PHILIP E. MELTZER, Boston, Mass.: Just one final remark. I do not think there is any question about who should direct a rehabilitation center or service for the deaf in a medical institution. I trust I did not imply that the audiologist take over such a service in a hospital. I doubt that a medical institution would permit anyone other than an M.D. to direct a hearing service.

The paramount question is: What about this service for the great majority of people? Regardless of how we feel about it, the fact remains that we, as physicians, do not give these patients the service they require. As long as we fail in our obligation to the deafened, some socially minded group is going to see to it that these people do get the kind of service to which they are entitled. So the ball is tossed back to us again. And what are we going to do about it?

You have heard some suggestions that I think should work. The San Francisco setup appeals to me very much. We have attempted such cooperation in Boston by way of what we call a "consultation service" to the social agencies; it works reasonably well, although not to our complete satisfaction.

CHAIRMAN BOIES: The next part of our program was suggested to the Committee as an important subject for discussion. It is entitled: "Full Time versus Part Time Teaching in Otolaryngology." The printed program indicated that Dr. Frank Forman of Arkansas is to participate and present "The Viewpoint of the 'Geographical' Full Time Teacher." Unfortunately, Dr. Forman has been ill and is unable to be present.

The Viewpoint of the Full Time Teacher

JOHN A. KIRCHNER, M.D.
NEW HAVEN, CONN.

After the relatively short period of one year in private practice and a year and a half in full time teaching, I do not pretend to be an authority on either subject. Nevertheless, I am grateful for this opportunity to present what opinions I have formed. I have frequently been asked, either directly or by implication, why anyone would take a full time teaching job when there are so many good opportunities in private practice. This is a question which calls for a detailed answer since it has many ramifications.

I shall confine my remarks to what I consider the advantages of the full time system.

At the Yale School of Medicine, the full time teacher works on a straight salary paid by the University. He is responsible for the teaching program in the medical school and for the supervision of the house staff in the treatment of ward and clinic patients. He does private practice in the hospital as time allows, but the fees accrue to the medical school. This system offers certain obvious advantages to the Medical School, as well as certain advantages to the individual himself and to the specialty of Otolaryngology.

Advantages to the Medical School

By collecting the fees which the full time individual earns, the medical school utilizes the earning capacity of its staff members to meet its expenses. In this respect, it can be compared with the medical group where the profits are used to enlarge its facilities or to support some of the less productive members of the group. In the medical school, the clinical divisions such as surgery and medicine with their income from patient fees, help to finance the preclinical departments of anatomy, physiology, biochemistry, etc. This may well be the answer or part of the answer to the financial dilemma in which the medical schools find themselves today.

The full time teacher, not being dependent upon a private practice for his living, can feel free to devote his time to working with the house staff and students in the clinic, wards, and operating room. My own experience during the past few months has borne this out. I have been without a senior resident since June 10, and have been obliged to take care of the ward consultations, outpatient clinics problems and ward surgery. Since my income is not dependent upon a private practice, it was an easy matter to reduce the amount of my office work in order to devote more time to the ward and clinic patients and to continue the teaching program for the house staff and medical students. In this way, the University is assured of adequate hospital coverage and an uninterrupted teaching program.

Advantages to the Individual

The main advantage in a full time job in a large general hospital is that one sees better case material. An individual working in such a hospital having active ward, out-patient and emergency services, has an unequalled opportunity to see the choicest clinical material. The cases seen in consultation with pediatrics, medicine, chest surgery, neurosurgery, and other services will have been screened first by the individual service, then by his own house staff. Many clinic and private patients with diagnostic problems, or who are in need of major surgery, are referred to the University medical center to be dealt with as necessary. This means that the individual on hand in the clinic will see the patient and will probably have the opportunity to treat him. It would take a young man a number of years to acquire in private practice the amount of experience that he can get in a year or two in a full time position.

It must be assumed that the individual is one who is willing to work on a straight salary regardless of the amount of work he does. The University, at the same time, must offer a salary which compares favorably with what a man could earn in private practice if such a system is to continue. On the other hand, the individual is freed from certain economic chores involved in operating an office, since on the full time system, the office, examining rooms, medications, etc., are furnished by the Uni-

versity. The salaries of the secretary and office nurse are paid by the institution and their Social Security deductions, withholding tax, etc., are automatically taken care of, allowing the physician more time for professional duties.

It has been thought by some that an individual cannot do his best teaching unless he is working on a fee for service plan. I cannot agree that this makes a difference to all individuals. The teacher of a clinical science must admittedly see and treat patients if he is to be a competent teacher. If he is doing most of his teaching on patients in the out-patient clinic, the wards, and in the operating room, and if he is conscientious, there is little danger of his becoming overacademic.

Advantages to Otolaryngology

One of the major problems facing our specialty is the decline in the number of desirable applicants for residency training. The attitude among senior medical students and house staff appears to be that Otolaryngology does not offer a broad enough field to warrant three years of their post-intern training. Those whose interests run along surgical lines are of the opinion that our field offers too little major surgery for the time required in training. In this era of antibiotics they see many of the highly specialized otolaryngologic procedures of previous years being discarded or becoming obsolete. As a result, the tonsil and adenoid operation and a few minor procedures are the last forlorn survivors on the daily operating schedule of the average practicing otolaryngologist. Even worse, many of the more interesting surgical problems of the head and neck are referred to general or plastic surgeons. If ours is to continue to be a surgical as well as a medical specialty, it must embrace the management of many head and neck conditions which are now being treated by the general and plastic surgeon.

How, then, can the full time teacher help this situation? First, he can help enlarge the scope of our field. Second, in his close association with students and house staff, he can reveal to them the possibilities which we know exist in our field. The full time teacher, unhampered by the economic pressures of office practice, is relatively free to work with specialists in surgical fields which border on or cross the periphery of his own field. He can thus acquire certain useful technics of the plastic surgeon, vascular surgeon, and oral surgeon and adapt them to the problems of his own domain. What is more important in this close relationship is that he can demonstrate to the allied specialties that the Otolaryngologist has something to offer in the solution of their clinical problems. The surgical disorders of the head and neck will be referred to the Otolaryngologist only when and if each succeeding group of medical students and house staff discover for themselves that the Otolaryngologist has a better knowledge of head and neck anatomy than the general surgeon; a better understanding of the problems of nasal and palatal surgery than the plastic surgeon; and a better appreciation of the behavior and management of tumors of the upper air passages than the so-called oncologist or tumor surgeon. If, on the other hand, we are too busy to keep abreast of such a relatively broad program, then I am afraid we will fail to attract topnotch candidates.

I don't say that it is true in every case, but in general I think the full time teacher has a better opportunity to develop his own specialty and to put it across to the students in the many daily conferences, classes and clinics, than the practitioner who must leave his office and his patients, possibly to travel

across town, to take part in such activities. The full time man's work with the undergraduate medical students on research projects and thesis topics forms one of the most active parts of our recruitment program. During the past year, three of the graduating class wrote their doctorate thesis in Otolaryngology. This year, seven theses are in progress and I attribute this increase only to the fact that I have had the time to devote to their problems.

Finally, a great deal depends upon the individual teacher. A lacklustre full time teacher or one lost in a cloud of some particular project would, of course, be of less value than a part time man who had the time and interest to produce several hours a day of inspired teaching. Nevertheless, because of the reasons I have given, namely: more free time, general availability, constant contact with students and house staff, and freedom from economic pressure of practice, I believe that the full time man will accomplish more for his students and for his specialty than one who must divide his time and interest between a teaching program and private practice.

CHAIRMAN BOIES: Thank you, Dr. Kirchner. Again, I must announce that another member of this panel is unable to be here. However, he has sent on his prepared paper and after considerable persuasion, Dr. James Maxwell has consented to read Dr. Furstenberg's paper.

DR. JAMES H. MAXWELL, Ann Arbor: Mr. Chairman and Members of the Section: Dr. Furstenberg planned on being here definitely and was greatly disappointed that some problems in the medical school prevented his coming. Dr. Boies asked me to read his paper, which he sent the night before last.

A Consideration of Part Time Faculty Services in the Medical School

ALBERT C. FURSTENBERG, M.D.
ANN ARBOR, MICH.

It would seem desirable as a preliminary to a discussion of this problem, to define the terms full time and part time faculty services. Considerable misunderstanding and confusion still exist in regard to the meaning of these designations because they have been given different values and interpretations in various parts of the country.

For example, full time in some medical schools, often called geographical full time, indicates that the faculty member maintains his office in an affiliated hospital and is permitted to conduct a consultation practice for which he is directly compensated by his patients. His practice is derived for the most part from patients referred to him by physicians, although it is seldom possible to enforce limitations or restrictions of this character upon the professional man who must care for the sick. His advice and services are frequently requested by friends, acquaintances and influential persons who come to him directly, without reference from another doctor, because of his reputable position in the profession and special skills in some field of medicine.

Traditionally, full time in the Medical School of the University of Michigan and in many other institutions is defined as that type of service in which the basic tenet is that professors in the clinical department shall devote their time to teaching, research and the care of the sick and be remunerated in full by salaries paid from the general funds of the university.

In contrast, part time is defined as that type of service in which the pro-

fessors in the clinical departments devote their major interest and effort to their departments, but are permitted to utilize a portion of their time for the practice of medicine and to collect and hold fees derived from private patients.

Full time as above defined and practiced in a few institutions in this country remains a somewhat confused and abstruse designation. In substance, it means that the faculty member of the clinical department so classified should devote his energies and time to teaching, research and hospital work without seeking a livelihood from the practice of medicine. The term, perhaps, is in many instances a misnomer. Many of the clinical professors in this country who are listed as full time men augment their incomes from sources outside their regular university salaries. Royalties from books, fees for lectures, compensation for industrial counsel, services to insurance companies, medical legal expert testimony, etc., frequently constitute the various means of increase in university salaries to full time men.

Part Time and Full Time Tenure As They Appear in the Various Medical Schools of This Country

From a perusal of the bylaws of various medical schools, a study of their histories, and discussions with their Deans, I gather that there are four plans of academic tenure in existence today. Each may vary somewhat in its philosophies and administrative details but, in general, they fall into four main categories.

The first plan, which might be considered the purest form of full time is that in which the members of the faculty, without exception, receive fixed salaries and are prohibited from accepting remuneration for any kind of service, professional or otherwise. The constitution or bylaws of the institutions operating under this system prohibit the acceptance of compensation for any services rendered in line of duty. All pecuniary benefits derived from services which might be interpreted to be the responsibilities and obligations of the institutions are credited to the treasury of the school.

I need not take your time to reiterate the claims of the proponents of this plan. There is the same resort to statements of praise that were heard forty years ago. The same assertions of its idealistic influences and practical values are being made now that were loudly acclaimed in 1910—undivided attention to academic ideals, uninterrupted research programs, single-minded devotion to the classroom—and so on into righteous claims of a utopia in medical education.

Naturally, the question promptly comes to mind, "Why has not this plan been universally adopted if it is one which is ideal and practicable?" If it is possible to maintain a medical school on this basis, an institution dedicated to a high standard of medical care, adequate training of medical students and the advancement of medical knowledge, why have so few schools adopted this system? Obviously, it does not enjoy great popularity or its use would be more widespread. Although advocated as early as 1910 by men who have made epochal contributions to the progress of medicine, this plan in its purest form is found in only a few institutions in this country and in these it is a recent experiment which has not yet stood the test of time. Are the expressions of skeptics true, that only two types of faculty members will remain in the clinical departments of a medical school operated under this system, the young man who is earning his spurs and the elderly clinician who is looking for a position in which to retire? Is it not true that when young men of profes-

sional talents and high academic attainments reach a certain level of training, their value in the open market gives rise to bids from other schools capable of offering rich inducements, and that in the last analysis the candidate often goes to the highest bidder? Singular devotion to an institution is admirable, but can it be relied upon for the maintenance of a progressive and dynamic faculty of young professional men? Any attempt to answer these questions will undoubtedly give rise to ethical differences of opinion. Among the elders of academic tenure, however, I can attest to one fact, namely, that when a faculty member reaches the later decades of life, he frequently expresses a willingness to accept a full time academic appointment where he may unobtrusively retire in a tranquil atmosphere free from competition, to devote his time to study, writing and research. It is not to be inferred that men approaching the retirement age are incapable of conducting their departments in a creditable manner. On the contrary, many of them continue to display a high degree of administrative competence, diagnostic acumen, and even surgical skill. But the point I wish to emphasize is that the institution is in little danger of losing the men, in their advanced years, age 60 or over, because professorial appointments are seldom offered to persons in the later decades of life. If, by chance, an invitation should be tendered him, there is little likelihood of his acceptance at an age when transplantation to a new environment is difficult and impracticable.

The second plan of full time is frequently termed "geographic full time." This arrangement permits the faculty member to maintain an office within the affiliated teaching hospital to which he is devoting his major interest and to engage in private practice for fees paid him by his patients. While it is frequently indicated in resolutions or bylaws governing the activities of such faculty members that they must restrict their private practice to patients referred by physicians, it is seldom possible to limit their efforts to this group. Influential citizens and friends of the university request their services, and humanitarian considerations as well as the promotion of public relations, demand that the doctor care for persons who are sick, no matter what the auspices under which they may come for advice. No restrictions are placed upon the extent of his private practice, except that it shall not be allowed to reach proportions that interfere with the application of his major interest to his department. Here, as in all walks of life, the institution must depend upon the loyalty, honesty and integrity of the man and his devotion to duty.

This plan seems to have enjoyed considerable popularity over the years, because we find it operating in many of our leading medical schools today. Affiliated teaching hospitals with modern out-patient departments seem to have instituted this system advantageously in their part time clinical departments. Institutions which are not equipped with private offices, examining rooms and other adequate facilities have never embraced geographic full time because their administrative officers have contended that it is not practicable or for the best interest of the hospital to employ the same waiting rooms and examining cubicles for patients who are public charges and those who are seeking private consultations.

Wherever facilities have been provided within an out-patient building such as those so efficiently utilized today by some of our large private clinics, geographic full time appears to be operating with satisfaction to the members of the faculty and administrative officers as well as with credit to the school.

The third plan calls for a salary budget for each department in the medical school sufficient to provide liberal salaries for the professors in the clinical services, ranging in some schools from $10,000 to $30,000 annually. No direct pecuniary benefits for medical or surgical care are received from the patient by the doctor. Fees derived from patients go to the general fund of the hospital and are utilized principally to pay adequate salaries to men who hold important clinical posts. In some institutions, income derived from private patients goes to the development of the department in which the patient is registered. In hospitals where this plan is utilized, the chairmen of departments and their staffs are on a full time basis, while other important members of the faculty in the dispensaries, in clinical teaching and in the instruction of special subjects, engage partly in the private practice of medicine. It is generally conceded by the administrative officers of these schools that part time men are advantageously used in their outpatient departments and in teaching schedules.

This program is obviously feasible and practicable for some of the endowed schools, but difficult of application in state supported institutions. At the University of Michigan this scheme, termed the "pork barrel" plan, was tried in 1920. It was unremittingly disapproved by the Board of Regents and administrative officers who had long held the conviction that income derived from patients should go to the general fund of the university and not to the development of the department in which the individual renders service. In closely knit medical schools where the clinical faculty is one large family, functioning as a team in mutual interest, this plan has never met with favor. Certain departments whose services are not in great demand may be obliged to subsist on meager incomes, while others not necessarily making equal contributions to medical education and research may enjoy the luxuries of prosperity derived from a peculiar service they are qualified to render.

This plan was attempted in the Medical School of the University of Michigan in the early twenties and was vehemently opposed by the medical profession of the State. The chief objection was the direct payment of fees derived from patients to the general fund of the University Hospital. Our alumni bitterly attacked the plan on the basis that they were unalterably opposed to a system that forced them to compete with a state institution which they, as residents of Michigan, were supporting by payment of taxes. The Medical School was exposed to the most bitter controversy of its career. The profession in Michigan strongly objected to the establishment of a private clinic in Ann Arbor, but steadfastly professed its willingness at any time to compete in private practice with individual physicians in the clinical departments of the Medical School.

In some of the endowed schools where this plan appears to operate successfully, it is to be observed that many of their faculty members who hold important posts are on a part time basis. As in most medical schools a mixture of the two plans is considered the best means of operating the clinical departments. The doctors who are on part time conduct their private practice in downtown offices, but receive no compensation from ward and clinic patients and most of them receive nothing for their teaching services in the medical school.

The deans of medical schools in which part time teachers receive no salary often express dissatisfaction with this policy. Failure of such members of

the faculty to meet their classes or to discharge other duties of their office is often attributed to the lack of a feeling of obligation to an institution that does not compensate them for service. Their deeper interest is in their private offices. Wherever this plan has been adopted and it is widespread in many of the medical schools of this country, the deans look wistfully toward the time when their budgets will be augmented sufficiently to pay a salary to every faculty member who serves the clinical departments in any capacity.

The fourth plan is an arrangement whereby the members of the clinical staff collect and hold a stipulated sum of money from private patients examined and treated within their departments. A central business office may handle these transactions. An income ceiling is usually established although in some instances the faculty member may share with the medical school on a percentage basis any fees earned above a designated amount. For example, the individual may be permitted to hold the first $10,000 collected as fees but required to divide the next $5,000 equally between the institution and himself. In most instances, the medical school's share goes directly to the support of the staff member's department rather than to the general budget.

My brief investigation of this plan seems to indicate that it is not very popular either with the administrative officers of the medical schools or with the clinical teachers. A uniformity of remuneration among faculty members is accomplished so that there is more or less of a standard basis for the different academic ranks. Criticisms of this plan have been expressed as follows:

1. Because of a pattern of salaries for the various ranks, promotion is essential to an increase in salary. For obvious reasons, the promotions may be delayed beyond the time when they are merited or offered prematurely in order to enhance the staff member's income. An inordinately rapid rate of staff promotions may soon result in a top-heavy department, namely, a preponderance of "generals" with too few "privates."

2. The retention of the institution's share of income for the staff member's own department led to the criticism currently expressed in regard to the pork barrel system of full time. Here the department better able to sell its wares profited to an envious extreme, while other less fortunate units equally or perhaps more important to the academic program of the medical school were obliged to eke out an existence from the annual departmental appropriations and unpredictable private proffers.

3. Whenever a departmental pool was created in which all members of the staff contributed, the question of how much any one individual would withdraw became an important matter and one which often led to bitter discussions. The administrator charged with the duty of determining what percentage of the staff member's income should be returned to him found himself confronted with a problem not easy to solve in an academic institution with high ideals of democracy.

4. On this plan the university must approve and report in its budget a large annual salary for outstanding teachers in the clinical departments. Here again, in a state supported institution the question is raised, what would be the reaction of the faculty in the other schools and colleges on the campus, members of the legislature and employees in other state agencies, to these high salaries? I suspect it would be one of avowed disapproval.

In the Medical School of the University of Michigan, as in most of the medi-

cal schools of this country, both full time and part time men hold responsible positions in the clinical departments. It is impossible to distinguish one from the other in terms of service to our school. Each member of both groups is meeting his teaching assignments, promoting research to the best of his ability with the available facilities and staff, and exerting every effort to give considerate attention and skillful service to patients assigned to his department, whether they be state charges or private patients. From the standpoint of teaching qualifications, there is no distinction between the full time and part time men. In scholarly productivity, there are no outstanding differentiations between the full time and part time departments. In the care of the sick, both full time and part time staffs render equally competent service. To outside investigators evaluating our clinical departments in respect to their teaching qualifications, scientific productivity and quality of medical service, no variance between the full time and part time departments would be possible. For the past twenty years, we have assumed that both plans are consistent with American ideals and the best interests of the university. We have held to the belief that the fate of the Medical School does not depend upon full time or part time, but on the will and the spirit of its faculty.

CHAIRMAN BOIES: Thank you, Dr. Maxwell. These presentations are now open to general discussion.

DR. JOEL JAY PRESSMAN, Beverly Hills, Calif.: This is a subject in which I have recently become tremendously interested, and I must compliment Dr. Furstenberg upon his most brilliant recital of the problems that exist and upon his analysis of the solutions that are possible. I must also compliment Dr. Maxwell upon presenting them so very beautifully.

I would like to take this opportunity to quote from a conversation that I have had with one of our outstanding American teachers, a leader in his field, well known to all of you and member of the Board of Regents of our University of California, Dr. Howard Naffziger. We discussed this problem at some length, and I quote rather loosely from this conversation, in which Dr. Naffziger said this: "The right to occupy a full time faculty position presupposes an obligation to contribute to the advance of medicine by researches and studies of problems which require a greater application of time and energy than is possible for those who must use their time and energy for acquiring the means to support their family."

In other words, Dr. Naffziger would take the full time faculty and demand of it contributions to the advances of medicine far beyond the requirements of a teacher. Dr. Naffziger who has, perhaps, a better insight into this than anyone with whom I have spoken, feels the teaching of the practice of medicine to students is best done by those who practice medicine, and the practice of medicine is not localized or limited to the practice in a clinic. The private patient must be the beneficiary of our professional skill, and the private patient is being treated and studied by those who are in the clinical practice of medicine and not devoting their full time to the university.

I would like to quote from another less illustrious individual by the name of Joe E. Lewis, who is a comedian. Joe E. Lewis said he had a manager whom he had just had to fire because the manager was a fool. The manager said, "Joe, you are not putting any of your money away. I am going to take some money out of each of your weekly pay-

checks and, before you know it, you have $50,000 put away and this will take care of you on the occasion of a rainy day."

Joe said, "I fired the fool. Supposing it never rains! There I am, stuck with $50,000."

Now, indirectly this represents at least one problem that we have to face at our medical school. We accept the right of a patient to choose his physician. We do not think that, because the man is able to pay his taxes and, therefore, support our school, this fact alone should deprive him of the right to select his physician. We think that there should be no loss of free choice by virtue of being an earner. We think if a man comes to us and seeks our professional skill, he is entitled to have it, and we are entitled to give it to him.

Now, what is going to happen to the money he pays for a professional fee if he chooses a full time University Professor as his doctor? This is our problem. We are "stuck with $50,000." We cannot give the money to the university. The university is, legally, a corporation, and is, therefore, not entitled to engage in the practice of medicine which presupposes the right to accept these fees. If I earn a fee and turn it over to the university, the university is, in effect, practicing medicine, which is illegal. A corporation cannot practice medicine. We, therefore, do not know what to do with this money. We cannot accept a smaller fee than our colleagues because to do so would be taking an unfair advantage of them. We cannot undercut in prices because we do not want people to come to us by virtue of the fact we will charge them less. We cannot take care of them for nothing because a man entitled to free medical care is entitled to it only on the basis of being indigent. The funds, therefore, accumulate and the answer as to what to do with these funds is a problem that has not yet been solved.

We will at our school accept any reasonable solution. We are coming to the point where we would be glad to accept any solution reasonable or not. This problem is one which I could discuss hour upon hour because I have lived through it year after year.

I would be most interested in hearing the answer to this problem. I think teachers of medicine should be men who are practicing it. I think research men should be men who are subsidized so that they can devote their full time and energy to this.

I would like to see a situation exist where the clinical staff of a university does its teaching and its clinical work; where the full time, subsidized faculty does its basic, long range, far-reaching research that is so essential to the advancement of medicine.

I would like to think of myself being subsidized not to make competition less, as far as I am concerned, or to assure me of a safe old age, but to encourage me to carry on with whatever basic problems I can, because of the freedom of time and the saving of my energy.

DR. PERCY E. IRELAND, Toronto, Canada: Dr. Boies and Members of this Section: I think both of these papers merit a considerable amount of praise. Dr. Furstenberg presented this subject with much food for thought. I am sure, from his position as Dean of Medicine, he can speak with authority in his knowledge of what is done in the various medical schools and of the problems that occur, aside from an individual department.

Immediately following the war, to speak personally, I was confronted with this problem. They wanted me to accept the position as head of our department, but on a full time basis. I considered this

for some time and decided that I did not want to give up the zest for private practice, if you want to call it by that name. I think that some of the most interesting cases that I see are the ones that come to me privately.

I think I disagree with the first speaker in that he has lived with the most interesting cases in hospital. The interesting cases are not all public ward cases; if you do a referred type of practice, the interesting problems are very often private cases.

I agree very much with Dr. Pressman. If you are going to teach medical students, graduate students and interns, you must be able to teach them the sort of practice they are going to have and not only that of the charity patients. They must be taught to see and treat the type of cases that will come into their office with money in their pockets and a desire to pay for good advice.

I do feel, in the case of the full time man who turns his money back to the university, that perhaps this is one of the inroads of state medical care. We know what happened in England and I do not think we want that. We do want the individual to be able to choose the doctor he wants and to compensate him personally for services rendered.

With regard to the work the full time man can give to his department, whether he is head of the department or not, I think that depends on the individual man. I think one might be a little inclined, if he is on a full time basis—though I do not know whether this is true or not—to consider that when five o'clock comes his day is finished and he can go home, as the interns do now; that is to say, work an eight-hour day and a forty-hour week.

If you are head of a department on a part time basis, you will find that your day is finished at twelve midnight or later. If you are going to have any success with it, you will be doing your university work in the evening, instead of going out with your friends.

I think the greatness of a department and the greatness of the man who runs the department, depends only on the man. I do not think it has anything to do with whether he works full time or part time. My personal opinion is that he has a much better chance of being successful on a part time basis where he can still keep his individuality.

DR. DEAN M. LIERLE, Iowa City, Iowa: Mr. Chairman and Members: I have had experience working under two plans, namely, the geographic full time with private practice and the full time. Personally, I prefer the geographic full time. It seems to me that the important issue is to obtain the men needed for the department regardless of the philosophies concerning full time and part time. It might be necessary to have three types of individuals: (1) the full time man who would be interested in research and would prefer a set salary; (2) the part time man who would have practice in the city and would be interested in teaching on a part time basis; and (3) the geographic full time man who would be of definite value due to the fact that he would be available for consultation in the department at all times.

DR. THEODORE E. WALSH, St. Louis, Mo.: I think this is an extremely important problem. I must say one has to agree with all the speakers, in part.

I am on the same basis as Dr. Kirchner, full time on a salary from the University. On the other hand, when I first took the job I insisted I be allowed to see private patients because I do not believe that anybody in a surgical specialty can possibly be good unless he is doing the surgery himself. He cannot teach his specialty unless he is seeing private patients and knows how to handle them.

Now the question of fees that come from the private patients. I cannot agree that this is the start of state medicine. The fees are paid to me by check. They are then turned over to the university. They are used, as Dr. Kirchner says, partly to support my department, because the endowment of that department would be quite inadequate without such fees, and partly they go to support the preclinical departments without which none of us can practice decent medicine. You must have strong preclinical departments in any university medical school. They deserve support. Their funds come from endowment which is usually inadequate to pay top-notch men what they deserve. I think that many of the men in the preclinical departments should be getting three or four times the amount they are getting.

We have in our Medical School no fewer than three Nobel prize winners, who are getting smaller salaries than some junior otolaryngologists in their first years of private practice. There is something wrong about that.

The fees we are paid are paid over to the university. It is a privately endowed university, and maybe that is different from a state university, but I do not see how that can possibly constitute the thin end of the wedge of socialized medicine or state medicine.

The advantages of full time are that one is not dependent on having a large private practice. He can choose what work he wants. He has time for research.

I am not holding a complete brief for full time because after all it is an individual matter. There are some men who can do a perfectly magnificent job as part time teachers, but there is often a great temptation to let private medicine interfere with teaching and department responsibilities.

I agree with Dr. Lierle that some people on geographic full time are well off; but full time and geographic full time cannot coexist in our institution.

CHAIRMAN BOIES: Dr. Kirchner, have you any further comment?

DR. JOHN A. KIRCHNER: I thank the discussers very much for their remarks. I must admit that I had my tongue in my cheek a bit as I presented this problem, but I think that the discussers have brought up all the pertinent points, that I think a better job can be done on full time if a man can devote himself to the job, but it may be a luxury which the medical schools cannot afford. They must pay a man what he is worth, and assume he is worth something if they hire him.

There are a few points here, if I may just take a moment. The point was brought up about how much depends upon the individual teacher. I made that point in my paper. It works both ways. A part time man must have a conscience about devoting the time that he should to his teaching duties. On the other hand, the full time teacher must have a conscience about handling dispensary patients and patients from whom he is not going to collect a fee, for there are many of those—doctors' families and doctors and people around the medical school. He must have just as much of a conscience about that and treat them just as though he were collecting a fee.

It always seemed to me the resident staff learned the economics of medical practice a lot sooner than they learned some of the other things about it.

Another point was why there were so few full time teachers. I think that depends entirely on the economic factor, that people just cannot see the tangible, financial results of their efforts in full time practice as they do in part time practice. But, by the same token, I think if one of the two is going to suffer in

any individual's practice, it is going to be his teaching and not the work by which he is making his living.

CHAIRMAN BOIES: I frequently receive communications from members of the Teachers' Section asking what can be done about the dearth of residency applications in Otolaryngology. Some angles of that have been discussed at each Teachers' Section meeting of the past two years. A suggestion was made that we consider this question: "Is a Rotating Internship Important Toward Interesting Physicians in Our Specialty?"

Is a Rotating Internship Important Toward Interesting Physicians in Our Specialty?

STANTON A. FRIEDBERG, M.D.
CHICAGO, ILL.

I would like to change the title of this just slightly. We started out by considering the role of the rotating internship in relation to Otolaryngology. Response to a questionnaire that was sent out to the heads of departments of Otolaryngology of the 80 medical schools of the United States and Canada made it necessary to change the title to something like this: "Present Day Intern Training in Relation to Otolaryngology."

The revival of the Teachers' Section in the American Academy of Ophthalmology and Otolaryngology has provided an unusual opportunity for frank discussion of problems relating to the specialty of Otolaryngology. Since we had been wondering for some time whether an adequate exposure to Otolaryngology was available to the average hospital intern of today, it seemed particularly appropriate to open the subject for the consideration of this group. I should like to thank Dr. Boies for the invitation to present the results of the following survey, and to express appreciation to the men who helped make it possible by their response to the questionnaire. The entire project, I might add, was sponsored by the Teachers' Section.

It seems quite apparent that younger men are not choosing the specialty of Otolaryngology in numbers comparable to former years. That this fact is arousing healthy concern is evidenced by numerous articles and discussions dealing with the present status and future of Otolaryngology.[1,6,9] Even though we may recognize that there has been an over-expansion of all residency programs in terms of available trainees,[3] the fact remains that in 1950, 33 per cent of the approved residencies in Otolaryngology were vacant[4] and in September 1951, 40 per cent of the approved first year residencies in the specialty were unfilled.[5]

One question which we might well ask ourselves is whether our concentration upon resident training programs[2,8] and proper concern over the type and amount of undergraduate medical school instruction[7] might possibly be responsible for inadvertent neglect of the intern who is in the process of deciding upon a specialty. The results of an extensive survey, as yet unpublished, indicate that over 50 per cent of the men beginning their internship have not decided upon the branch of medicine which they will pursue. Where does Otolaryngology stand in the recruitment of the undecided? To obtain the impression of men actively engaged in teaching, a survey was made of university-affiliated hospitals approved for residency training in Otolaryngology.

Method of Survey

Of the 116 hospitals approved for residency training in Otolaryngology,*

*This figure represents the year 1950.

81 are medical school-affiliated and the chief of service in these hospitals is often the department head in the medical school. The American Academy of Ophthalmology and Otolaryngology sent a questionnaire to the head of the department of Otolaryngology in each of these 81 institutions. Sixty-four questionnaires were returned by July 1, 1952. This 78 per cent return—high for a mail questionnaire with no follow-up—is indicative of the interest of men in the teaching centers who are responsible for training Otolaryngologists.

All statistics in this report are based on tabulations of 62 of the 64 questionnaires which were returned. Two of the questionnaires were excluded from tabulation since the institutions did not appear to have any interns in residence.

At a minimum, the findings of the survey reveal the situation in 62 school-affiliated hospitals or more than half of all hospitals approved for residency training in Otolaryngology. Unless there are striking differences in the program of intern instruction between these hospitals and the remaining 55 hospitals, for which no report was obtained, the results may be considered to represent a fair cross section of the situation of intern training in Otolaryngology in the full group of 116 hospitals currently approved for resident training in this field.

A copy of the questionnaire sent to these institutions is reproduced in table I.

TABLE I

SAMPLE QUESTIONNAIRE SUBMITTED TO OTOLARYNGOLOGY DEPARTMENT HEADS OF MEDICAL SCHOOLS AND SERVICE CHIEFS OF UNIVERSITY-AFFILIATED HOSPITALS

1. Does the rotating internship in your hospital include any service in Otolaryngology?		Yes	No .....
2. How many weeks does the intern spend on the Otolaryngology service?	.....		
3. Is the intern assigned exclusively to Otolaryngology or is his time divided with another service?		Exclusive	Divided Service .....
4. Is intern instruction a specific assignment of either the resident or the attending staff?	Resident	Attending Staff	Neither .....
5. Is there a definite program of intern instruction?		Yes	No .....
6. Would it be practical to initiate a definite program of intern instruction?		.....	.....
7. Does the intern or Otolaryngology have an opportunity to assist in:			
Endoscopy		.....	.....
Nose and throat surgery		.....	.....
Maxillofacial surgery		.....	.....
Aural surgery		.....	.....
Neck surgery		.....	.....
8. Do you feel that the average intern in your institution becomes sufficiently acquainted with Otolaryngology to enable him to consider choosing this field as a specialty?		Yes	No .....
Comments			

Major Findings and Analysis

In 34 of the 62 institutions, the head of the department of Otolaryngology did *not* feel that the average intern became sufficiently acquainted with Otolaryngology to enable him to consider choosing this field as a specialty (question 8—table II).

TABLE II

QUESTION 8—DO YOU FEEL THAT THE AVERAGE INTERN IN YOUR INSTITUTION BECOMES SUFFICIENTLY ACQUAINTED WITH OTOLARYNGOLOGY TO ENABLE HIM TO CONSIDER CHOOSING THIS FIELD AS A SPECIALTY?

Total	62*
Yes	24
No	34
Don't know	3
No answer	1

*64 persons returned questionnaires. Two of these are not included in the tabulation: one person stated that at his institution there were no interns; the other stated that he answered the questions for surgical residents rather than interns.

It would certainly seem that every intern should obtain enough knowledge of Otolaryngology to enable him to decide whether he would be interested in this field. This minimum standard derives partially from a desire to see an adequate number of doctors trained in this specialty. Equally important, a sound basic orientation is suggested so that the intern who enters general practice or another specialty will know enough about the field to recognize an otolaryngologic problem when he encounters one.

The basis for the judgment of a department head as to whether his institution does or does not give interns sufficient acquaintance with Otolaryngology is quickly revealed by comparing the actual training situation in these institutions.

Question 1—Does the rotating internship in your teaching hospital or hospitals include any service in Otolaryngology?

Rotating internships do not include any service in Otolaryngology in 16 per cent of the hospitals surveyed. Of those hospitals where intern exposure to Otolaryngology is felt to be insufficient, approximately one-fourth (26 per cent) do not offer any ear, nose and throat work as part of the rotating internship. *All* teaching hospitals where it is believed that the interns are "adequately exposed" include Otolaryngology in the rotating internship (table III).

TABLE III

QUESTION 1—DOES THE ROTATING INTERNSHIP IN YOUR TEACHING HOSPITAL OR HOSPITALS INCLUDE ANY SERVICE IN OTOLARYNGOLOGY?

	INTERN EXPOSURE			
	TOTAL	ADEQUATE	INADEQUATE	DON'T KNOW OR NO ANSWER
TOTAL	62	24	34	4
Yes	47	24	20	3
No	10	—	9	1
Elective—optional	2	—	2	—
Straight service—no rotation	3	—	3	—

Question 2—How many weeks does the intern spend in Otolaryngology?

Of the 49 institutions which include Otolaryngology on a rotating service, 5 give three weeks or less. The majority are found in the group which describe intern exposure as inadequate. A service of four weeks is given by 14 institutions which regard intern exposure as adequate, and by 15 which consider this exposure inadequate. More than four weeks service is available in 11 institutions and in these the acquaintance with Otolaryngology is held to be adequate with only one dissent (table IV).

Question 3—Is the intern assigned exclusively to Otolaryngology or is his time divided with another service?

In all teaching hospitals where service in Otolaryngology is included in the rotating internship, 57 per cent divide this service with another specialty and 43 per cent offer the service exclusively. It is quite evident that the divided service prevails among those who consider exposure inadequate (77 per cent) while the exclusive service is regarded as adequate by a comparable majority (76 per cent) (table V).

Question 4—Is intern instruction a specific assignment of either the resident or the attending staff?

In the hospitals which include service in Otolaryngology as part of the rotating internship, 20 per cent do not make intern instruction in Otolaryngology a specific assignment of either resident or attending staffs.

In every hospital where intern acquaintance with Otolaryngology is held to be sufficient, intern instruction in the field is either an assignment of the resident staff, the attending staff or both.

In those hospitals in which intern acquaintance with Otolaryngology is looked upon as insufficient, 41 per cent do not make intern instruction a specific assignment of either the resident or attending staffs (table VI).

Question 5—Is there a definite program in intern instruction?

There is no definite program of intern instruction in 57 per cent of the institutions for which information is available. Only 9 of the 24 institutions (38 per cent) which consider intern exposure adequate have no definite program. But of the 34 institutions which consider the intern insufficiently oriented in Otolaryngology, 24 have no instruction program (table VII).

Question 6—Would it be practical to initiate a definite program of intern instruction?

This question was answered by the 35 institutions where no definite program of intern instruction is available. In 20 of these (57 per cent) the department head felt that it would be practical to initiate such a program. Only 13 (37 per cent) felt that this would be impractical or possible only if permitted by surgery (table VIII).

Question 7—Does the intern in Otolaryngology have an opportunity to assist in surgery of the following type: endoscopy, nose and throat surgery, maxillofacial surgery, aural surgery and neck surgery?

In general, intern exposure of inadequate measure is predominant in the institutions where opportunity for assisting in specialized fields of Otolaryngologic surgery is not available to the intern (table IX).

In addition to the response to specific questions, many of the men commented freely on the various topics. In general the group felt that a more vig-

TABLE IV

QUESTION 2—HOW MANY WEEKS DOES THE INTERN SPEND ON THE OTOLARYNGOLOGY SERVICE?*

	INTERN EXPOSURE			
	TOTAL	ADEQUATE	INADEQUATE	DON'T KNOW OR NO ANSWER
TOTAL	49	24	22	3
3 weeks or less	5	—	4	1
4 weeks	31	14	15	2
5 to 8 weeks	8	7	1	—
More than 8 weeks	3	3	—	—
No answer	2	—	2	—

*Includes the 49 respondents whose institutions provide for rotating internships in Otolaryngology.

TABLE V

QUESTION 3—IS THE INTERN ASSIGNED EXCLUSIVELY TO OTOLARYNGOLOGY OR IS HIS TIME DIVIDED WITH ANOTHER SERVICE?*

	INTERN EXPOSURE			
	TOTAL	ADEQUATE	INADEQUATE	DON'T KNOW OR NO ANSWER
TOTAL	49	24	22	3
Exclusive service	21	16	5	—
Divided service	28	8	17	3

*Includes the 49 respondents whose institutions provide for rotating internships in Otolaryngology.

TABLE VI

QUESTION 4—IS INTERN INSTRUCTION A SPECIFIC ASSIGNMENT OF EITHER THE RESIDENT OR ATTENDING STAFF?*

	INTERN EXPOSURE			
	TOTAL	ADEQUATE	INADEQUATE	DON'T KNOW OR NO ANSWER
TOTAL	49	24	22	3
Resident staff	4	1	3	—
Attending staff	10	4	3	3
Both	26	19	7	—
Neither	9	—	9	—

*Includes the 49 respondents whose institutions provide for rotating internships in Otolaryngology.

TABLE VII

QUESTION 5—IS THERE A DEFINITE PROGRAM OF INTERN INSTRUCTION?

	INTERN EXPOSURE			
	TOTAL	ADEQUATE	INADEQUATE	DON'T KNOW OR NO ANSWER
TOTAL	62	24	34	4
Yes	23	15	7	1
No	35	9	24	2
No answer	4	—	3	1

TABLE VIII

QUESTION 6—WOULD IT BE PRACTICAL TO INITIATE A DEFINITE PROGRAM OF INTERN INSTRUCTION?*

	INTERN EXPOSURE			
	TOTAL	ADEQUATE	INADEQUATE	DON'T KNOW OR NO ANSWER
TOTAL	35	9	24	2
Would be practical	20	5	14	1
Would *not* be practical	11	3	7	1
Depends on institution—if surgery would permit	2	1	1	—
Don't know—no answer	2	—	2	—

*Includes the 35 institutions which do not have a definite program of intern instruction.

TABLE IX

QUESTION 7—DOES THE INTERN IN OTOLARYNGOLOGY HAVE AN OPPORTUNITY TO ASSIST IN THE FOLLOWING CATEGORIES?*

		INTERN EXPOSURE			
		TOTAL	ADEQUATE	INADEQUATE	DON'T KNOW OR NO ANSWER
TOTAL		49	24	22	3
Endoscopy:	Yes	46	23	20	3
	No	2	—	2	—
	No answer	1	1	—	—
Nose and throat surgery:	Yes	47	24	20	3
	No	1	—	1	—
	No answer	1	—	1	—
Maxillofacial surgery:	Yes	33	19	12	2
	No	11	4	6	1
	No answer	5	1	4	—
Aural surgery:	Yes	43	23	17	3
	No	4	1	3	—
	No answer	2	—	2	—
Neck surgery:	Yes	40	22	16	2
	No	7	2	4	1
	No answer	2	—	2	—

*Includes the 49 respondents whose institutions provide for rotating internships in Otolaryngology.

orous approach to intern training in Otolaryngology would yield a greater number of potential resident candidates. There were several references to the necessity for increased attention to undergraduate teaching. Lack of independence in relation to the department of surgery was alluded to as a handicap by a few respondents. I should like to quote one respondent whose succinct analysis merits attention: "When Otolaryngologists train themselves to deal with the surgical conditions of the head and neck in a broad way and gain the respect of the other departments in the medical school, we shall have no difficulty in attracting young men of high qualifications to this field. This will never be done, however, in those institutions which stifle the ambition of Otolaryngologists by inadequate budgets and definite limitations in their clinical activities."

SUMMARY

The results of a questionnaire submitted to department heads and service chiefs of university-affiliated hospitals on the role of the intern in relation to Otolaryngology have been presented.

In 34 of the 62 institutions, the head of the department of Otolaryngology did not feel that the average intern of today becomes sufficiently acquainted with Otolaryngology to enable him to consider choosing this field as a specialty.

In *all* teaching hospitals where Otolaryngology is included in the rotating internship it is felt that the intern has some basis for judgment as to the scope of the specialty.

The length of time spent on the service, whether the service is exclusive or divided with another specialty, the quality and quantity of intern instruction and opportunity all bear relationship to "adequate" intern acquaintanceship with Otolaryngology at the present time.

CHAIRMAN BOIES: Thank you, Dr. Friedberg. It is obvious that you have given a great deal of thought and time to a study of your subject. This presentation is now open to general discussion.

DR. ROBERT E. PRIEST, Minneapolis, Minn.: I have been fascinated by this whole discussion because it hits so many problems that are alive in my own medical existence. The problem of internship instruction has plagued me terrifically. I am a part time teacher and operate the service at the Minneapolis General Hospital under Dr. Boies' department. I feel constantly that we have done an inadequate job of intern instruction.

I have talked it over with the head of the hospital who is an internist and a very progressive individual. For about three years we conducted a series of lectures for each group of interns.

There were twelve changes a year, and we had eight lectures per group and, believe me, we were fed up with the lectures by the time we had done that for a few years.

We then talked over the possibility of having one group of lectures for the entire intern staff once a year. It was my idea that possibly other departments could enter into this activity and that, perhaps once a week the interns might have a class which would be taught by a member of any department, but they would know that on a certain day, at a certain time, there would be a class that would be of interest.

I may say our internship is a rotating internship in a municipal hospital and is quite sought after. We never have trouble getting enough people of good quality.

This idea of having classes did not meet with general approval, not because of the lack of interest in it from an aca-

demic standpoint but because, as someone mentioned, interns now have a tendency to work an eight-hour day and many of them are married, in contradistinction to the time when most of us were interns and residents, and when evening comes they like to go home.

There is not enough time during the day to mesh together all of the services and pick out an hour or two for these classes.

For the past several months I have been putting together — and I have not yet shown it to Dr. Boies, but I will do so soon because it is just finished—an intern's manual in ear, nose and throat, which condenses as much as I can condense of the field from the intern standpoint. We thought we would put it out in the hospital and see how it went and that it might possibly be of interest to others, or it is perfectly possible some of you may want to do the same thing.

In listening to these discussions this morning, one thing has been apparent to me; whether you are part time or full time, I think Dr. Kirchner's point that you must have a conscience about your teaching is the thing, and you must have time to teach, whether you are part time or full time.

When one is on part time at first, he has plenty of time to teach because his practice is not very big. As his practice grows, his time for teaching decreases. If he is a conscientious teacher, I think he must recognize that as it happens and get help to take care of part of his practice and give himself more time for his teaching if he wants to be a good teacher. If he doesn't, then he ought to give up his teaching.

Dr. Donald Alton Corgill, McKinney, Texas: My remarks are concerned with intern and resident training in Otolaryngology and also the problem as to who should do neck surgery. There has been much discussion of late concerned with the "shrinking field of Otolaryngology." I am speaking as one who has undertaken the treatment of malignancy involving the head and neck. Following an eight-month basic course and the required residency training in institutions of excellent reputation and having been thoroughly inculcated with the idea that neck surgery belonged to Otolaryngology, I was installed in a large hospital as Chief of Otolaryngology, and immediately demanded that such cases be assigned to the Otolaryngologic Service. I would like to observe at this time that young board-qualified Otolaryngologists were indeed scarce at that time. The Chief of Surgery, after expressing genuine amazement at my contention, arranged for me to do some of this work under the observation of an exceptionally competent general surgeon, and it soon became apparent to me that his skill at these combined operations was greater than mine. Humbled by the demonstration of superior skill, I immediately asked for and received kindly supervision and teaching from the General Surgical Service, and patients requiring combined primary lesion and neck surgery were admitted to my service. Now I feel the required competence has largely been attained. Our working arrangement now is that the General Surgical Service treats the malignancies of the lip, anterior floor of the mouth and tongue. If the malignancy has spread to involve the pharynx, laryngopharynx or larynx, it is then assigned to the Otolaryngologic Service, as are those in which the primary lesion is in the larynx, pharynx, nasopharynx, sinuses, etc. Most of our cases have been treated by radical surgery. There have been 10 cases requiring one-stage bilateral radical neck resections with total laryngectomy and total or partial glossectomy and pharyngectomy,

as indicated. The point I am making is that if we claim that this field belongs to us, then we must train adequately those of our residents who demonstrate an aptitude and a desire to do combined radical head and neck surgery in so competent a manner that no just criticism can be made of us. I am not aware that such training is now widely available to our residents. Aptitude and desire on the part of the resident is a necessary prerequisite, for I have noted that only a minor percentage of general surgical residents express the desire to do this exacting and exhausting surgery. Perhaps this work should be done by head and neck cancer surgeons, e.g., Otolaryngologists specially trained in general surgery or vice versa. However, then there would be all too few of them, and the situation at present is that, except in large medical centers, the cases requiring this type of surgery are avoided by Otolaryngologists and general surgeons alike, and, by default, receive irradiation therapy, which, I feel, in such cases is largely ineffectual and may well be detrimental.

Let us consider for a moment the plight of the general surgeon and his residents. In the largest medical centers the existence of all the other surgical specialties tend to restrict the activities of the general surgeons. Now the general surgical resident who goes out to practice in smaller cities in the absence of one or all of the supporting specialists must be able to handle all surgical problems and obviously must have been so trained. I think the same thing applies to head and neck surgery. Certainly Otolaryngologists, in order to treat malignancy of the larynx and adjacent structures, must be able to do adequate neck dissection, and in the absence of qualified Otolaryngologists the work falls to the general surgeon who, by the nature of his calling, is expected to be able to do any surgery necessary. Therefore, a multiplicity of training obligations exist, and these have worked out well in our institution, where interested residents in general surgery and Otolaryngology are trained in major neck surgery.

DR. HANS VICTOR VON LEDEN, Chicago: Is the present intern training adequate to interest young men in the specialty of Otolaryngology? I was very much interested in Dr. Friedberg's analysis of the results he has observed and the suggestions he has received from his collaborators.

I think there are one or two points that might profitably be stressed. The first refers to the peculiar disadvantage of our specialty in intern training. Our field is partly medical and partly surgical. The medical part of our specialty requires no hospitalization. Therefore, the intern assigned to the hospital, with but few exceptions, is unable to follow the medical portion of our practice at all.

Our surgical work is highly specialized, and usually performed through a small opening or incision; at times even the operator finds it difficult to obtain good exposure inside the nose or the ear, or through a small endoscope. It follows that the intern is unable to visualize our surgical procedures as well as he can most general surgical operations; naturally, it is more difficult to stimulate his interest in a procedure where he is asked to assist, but where he is relatively unable to participate.

Secondly, I feel very strongly that the answer to attracting the intern to our specialty and to our program lies in the scope of the department of Otolaryngology in each individual hospital. No intern will be interested in a department or specialty where, as was pointed out earlier today, the Otolaryngologist

confines himself to tonsillectomies, diagnostic endoscopies, and an occasional submucous resection.

If the department of Otolaryngology does not include the plastic work about the head and neck and cancer surgery, it cannot be expected to attract topnotch men to its team. Again, if the teachers in the department are not willing to let the intern participate in the surgery, in no matter how small a manner, they will be unable to attract good resident material.

CHAIRMAN BOIES: Unless some one else wishes to speak, this concludes the third successive annual meeting of the revived Teachers' Section of the Academy. The attendance this morning equals that of last year (when 125 were present) and shows your interest in these discussions. The Teachers' Section of the Academy will welcome suggestions from any of you regarding subjects for future discussion, and invites you to participate in these discussions.

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SUGGESTIONS TO THE PARENTS OF A DEAF CHILD

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and

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BY INVITATION

WHEN after many tests have been made it has been pretty well proved that Jane has a hearing loss, a number of specific problems related to her development and education present themselves. You, as parents, have a major role to play in helping solve these problems.

In the first place, it is most important that you regard Jane as essentially "normal"; that you see her as a child who is able to see, to feel, to smell, taste, to run, jump, to cry, laugh, to be good or to be naughty. In other words, she is just like any child in every respect but in her ability to hear. You must treat her as you would treat any child her age. Because she has a hearing impairment does not mean that you cannot teach her to obey, to be thoughtful of others, to care for herself and for her possessions, just as you can teach any child. One might almost say that it is more important that a deaf or hard of hearing child be taught to obey than it is for a child who hears normally, because the deaf child's safety may depend upon your hearing approaching danger and warning her of it.

Some time every day, play with Jane. Don't spoil her but let her know, in ways that she can understand, that you love her and very dearly. Never let her be aware of your sorrow over her hearing loss. By accepting, not crying over it, you can do much to teach her to accept it. This is one of the very hardest things we will suggest that you do. But it is perhaps the most important one thing in her development. You see, she learns her attitudes from you. If you feel no shame, no embarrassment over her hearing loss, she will feel none. She will learn to accept it as she accepts the fact that her grandfather wears glasses. Try to look at what she can do, not what she cannot do. Your friends and other children will speak to her much as you speak to her. Your attitude will be theirs. If you accept her, talk to her, expect her to join in their play, so will they accept her. If you say "poor thing" and think only of her handicap, so will they pity and thereby exclude her.

EARLY LEARNING

There are several avenues through which children learn, namely:

1. Through watching others and doing or remembering what they see others do.
2. Through feeling and identifying an object or action by associating and remembering how it feels.
3. Through listening and imitating and remembering what they hear.

Because Jane is deaf, she is cut off, at least partially, from one avenue of learning. She does not hear what goes

From the Department of Otolaryngology, State University of Iowa, Iowa City, Iowa. The purpose of this "letter" to the parents of a deaf child is not only to instruct the parents in what may be done for it but also to instruct the otologist. In fact, this latter purpose is considered far the more important of the two. Preschool training such as is presented here is a most important step in rehabilitating the congenitally deaf child.

At the present time, Miss Keaster is Chief Audiologist, Childrens' Hospital, Los Angeles, and Miss Hoversten is Audiologist, John Tracy Clinic, Los Angeles.

Prepared by a Subcommittee of the Committee on Conservation of Hearing of the American Academy of Ophthalmology and Otolaryngology.

on around her. As a consequence, her speech has not developed in relation to the rest of her development or in a manner comparable to other children her age. That is due to the very nature of speech development.

HOW A HEARING BABY LEARNS TO TALK

Let's look for a moment at how the hearing baby learns to talk. All babies "babble." By "babbling" we mean a repetition of sounds that have no meaning. The hearing baby learns to form that babble into meaningful words by imitating what he hears being said around him. Remember, too, that the hearing baby listens for approximately a year before his babblings become meaningful "words" to us. He learns to say "mama," "bye-bye," and "daddy" by listening to an adult or another child say the words, and then trying to imitate what he hears. He tends to repeat the sounds when he finds that they bring him pleasure in the form of responses from the adults around him. When his mother gives him his bath or feeds him, she talks to him, often referring to herself as "mama." He then comes to associate her presence with the word "mama"; eventually he learns that when he says "mama" she is pleased and loves him, and that her smiling face and loving arms appear to comfort him.

"Hot" is a word which is often among the first a child uses. Why? It has been repeated over and over again to him. It has been made important by the tone of voice, and by the warning gesture that accompanies it. With a deaf child it is not always possible to make words important by the use of various tones of voice, but the word can be repeated over and over. A gesture will sometimes help to explain. It has been estimated that the normally hearing child hears a word sixty times before it becomes his to use. The deaf child needs to see the word used a great many more times than that.

The hearing baby makes repeated attempts before even the word "mama" is intelligible. This is a very important thing to remember. Think about it when Jane must try and try before she is able to say a word. She cannot imitate what you say because she does not hear what you say. Her organs of speech are perfectly normal. But she must be given other means of imitating speech than just through her ears. As was said previously, children learn through watching and through feeling as well as through listening. We must teach a deaf child to watch speech, to feel speech and to use his residual hearing in order to teach him to talk.

SENSE TRAINING

In order to learn to speak through watching and feeling, as well as through listening, Jane must learn to use these senses to as great an extent as possible. This is called sense training; she is learning to use the senses of sight and of touch to supplement her diminished sense of hearing. To do this, Jane must be alert. She must be able to see and feel very small differences. She must be able to remember what she sees. That is why it is important to give her many opportunities to notice things that are different and things that are alike, to observe, to concentrate, and to remember. She needs to begin by learning to notice large differences first—differences in color, size, shape, etc. When learning progresses, Jane will note smaller and smaller differences, until finally she will be able to make the very fine discriminations necessary to understand and to produce speech.

In the beginning, learning takes place largely through imitation. A child may see her mother do something which interests her; she wants to see this interesting thing again; she wants to do it herself or, in other words, she wants to imitate what you do. She tries, and finally after many attempts, she masters it.

FIGURE 1.

FIGURE 2.

FIGURE 3.

The important thing to remember here is that she attempts imitation because it interests her and it looks like fun. This forms the basis for all of our early learning.

Let's begin with color matching. Use only two colors at first, perhaps blue and yellow. Not until you are sure that she is able to match those two colors, do you add a third. Perhaps you have some blue blocks and some yellow blocks. Put a yellow block on the table. Then put another yellow block beside it. Talk about what you are doing. "Here's a block. This is a yellow block. I'll put the yellow block here." Give her a block, and tell her and show her that you want her to put the yellow block beside the others. You may take her hand in yours so that you are helping her pick up the block and place it beside the others (fig. 1). Show her a blue block and talk about it as you put it on the table. Then add another blue block in the same fashion. Help her put a blue block beside the others. Then you may add one. Help her add another. Continue showing her what it is you expect her to do. Show your enthusiasm. If you think that it's fun and a fascinating new game, she will think so too. If she does not understand, that's all right; try again tomorrow. Keep on showing her and talking to her in simple sentences.

VARYING MATERIAL TO MAINTAIN INTEREST

It is necessary to teach the same thing over and over. In order to keep Jane's interest, vary the way in which you teach it and the materials which you use. You can build blue block trains and yellow block trains or towers or bridges. Use large wooden beads. String all the blue beads on one string and all the yellow ones on another. Incidentally, you might each wear the chain as a necklace. That is just one way of showing her that you are pleased with her efforts.

The ten cent store may have small colored dishes. You may use these to put the matching beads, buttons or ribbons in (figs. 2 and 3). Perhaps you have some yarn. Find a blue sheet of construction paper and a yellow sheet. Put all the blue yarn on the blue paper and put all the yellow yarn on the yellow paper.

Or you can put the blue car in the little matching blue paper garage you have made. When she is able to match all the blue objects and all the yellow, then you may begin work with a third color. Be sure that she is able to match the three colors before you go on to the fourth. Pick up a blue ribbon and match it to her dress, or to your dress, or perhaps to a blue pillow or some blue in a curtain. Encourage her to do this. Make use of opportunities as they present themselves in the course of your everyday activities. Occasionally she can help you match the clean socks, but remember to begin with plain colored ones. You won't expect her to be able to match up the hard striped kind yet.

As she is learning to match colors, she is also gradually learning that what she sees on your lips has something to do with what she is doing. You are preparing her to lip-read. Eventually she will associate a specific word or phrase or sentence with a specific act, color or object. One day you will be able to say, "Where's a blue block" or "Find the yellow block" and she will understand.

You can vary color matching by holding up a block and then pointing to a blue block on the table. Hold up a yellow one and point to one like it on the table. Keep on doing this until she understands and can point to one like the one you are holding. Then she is ready to have you show her the colored block and put it behind you. Point to a block the same color as the one you removed. Show her that the two are alike and continue.

Circles, squares and triangles can be cut from colored construction paper. At first, do not confuse her by mixing sizes, shapes and colors. Use only one shape of whichever color you are working with.

Another way to vary color matching is to cut out large squares of material and paste on file cards that can be purchased at the ten cent store for a few cents. For example, you may have two cards with plain yellow material, etc. After she can match the plain colors, you may add a few prints.

FIGURE 4.

Large blocks of wood of varied sizes (triangles, tall cylinders, short cylinders, squares, etc.) are excellent for beginning work. Work with Jane in the same fashion as you did when matching colors. Remember to begin with just two different shapes at first. Give Jane a box of blocks (perhaps several cylinders and several triangles). You may keep a box of blocks identical to hers. Place a block on the table. Help Jane look in her box for one just like it and put it beside the one on the table (fig. 4). Spools, blocks, rings, cords, bottle tops, tin cans, and empty boxes can be used in the same way to teach Jane to notice likeness or difference in size and shape.

Use the colored paper circles, squares, and triangles which you have made for color matching; now she is ready to learn to match all the blue circles, all the blue triangles, and all the blue squares.* Later you can vary the size of the cut-outs. Show Jane how to match the two large blue circles and the two small blue circles. When she is first learn-

*This is somewhat advanced, it should be brought in later, after Jane has learned to match simple objects.

FIGURE 5.

FIGURE 6.

ing to recognize size, keep the cut-outs the same color. Then show the contrast in size using the other colors. Later have her put all the large circles (blue, red, and any other colors) in a pile and all the small circles in another pile. Add an in-between size when she has become skillful in seeing the large differences in size. Remember to make the differences large enough to notice easily at first.

It's a good idea to paste some of these paper cut-outs of different colors and shapes on a large chart. Use the matching cut-outs and have Jane match the blue triangles to the blue triangle on the chart (fig. 5). Later she will be ready to learn to put all the cut-out paper triangles (red, blue or yellow) on top of the triangle which is pasted on the chart.

After Jane has had some experience noticing the very large differences in color, size and shape, begin helping her to learn to match objects. At first, remember to use only two sets of identical objects. Perhaps to begin with you might use two spoons and two cups. Show her a spoon and tell her "Here's a spoon. Here's another spoon." Put the spoons side by side. Then show her the cup. Place the other cup beside it. Then it is her turn to match. You can put the cup on the table. Tell her "Find another cup" and show her. Remember to keep talking about what you are doing and to keep showing her what it is you want her to do. When she can match the two, add a third.

You have many things at home which you may use, such as pencils, books, bowls, keys, combs, paper, pans, caps, shoes, soap, towels and boxes. You may use apples, oranges, bananas, leaves and sticks. Most ten cent stores have miniature objects (tables, chairs, houses, dolls, etc.) which can be used.

Jane's next step will be to learn to match pictures to other identical pictures. Use large simple ones (preferably only one object to a picture at first). Add more when she is able. Later you can vary this so that Jane has many pictures of different kinds of dogs, or many pictures of different kinds of chairs.

The game, "Object Lotto," is a good one to play here. Each player has a card and then takes turns drawing from a pile of single cards which match the pictures on the large card (fig. 6). Remember your purpose here is simply to match picture to picture. Talk to her just as you have with the other activities and she will gradually learn that the objects in the pictures have names. Do not

FIGURE 7.

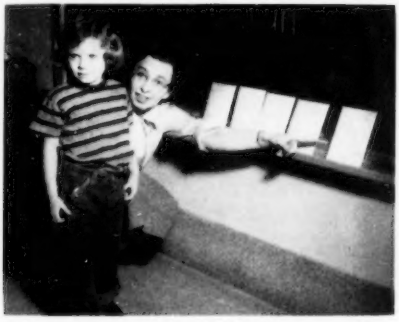


FIGURE 8.

try to specifically teach her the names at this point. She has enough to do identifying the pictures.

Now, Jane is ready to match objects to pictures of the objects. At first, choose pictures that are as similar to the objects as you can. If you have a large red apple, find a picture of a large red apple (fig. 7). Show Jane and tell her "Here's an apple. Here's a red apple. Here's a picture of a red apple. Put the apple here. Put the apple here by the picture. Now here's an apple, and here's another apple." Later you may have a little brown rubber terrier as the object, which she will be able to match to many kinds of dog pictures. She is learning to classify them all as dogs.

Look for pictures of babies, of children, and of people doing various things that you and Jane can imitate (fig. 8). "Here's a picture of a little boy. The boy is running. I'm running. You run. Jane is running." Laughing, waving, smiling, crying, hopping, jumping, eating, and clapping are all things Jane will enjoy imitating. If you find a picture of a little girl with her hand outstretched, or a child kneeling, or a baby with his hand touching his hair, Jane can imitate these body movements.

You may also find pictures in magazines of a child blowing out birthday candles, of a lady saying "Oh" (her lips very round), or of a child with his mouth wide open ready to bite an apple. Point to the mouth in the picture. Then point to your mouth as you imitate the picture. Indicate to Jane that she is to imitate the child in the picture. She will find this lots of fun.

Finding objects in a bag by touch only will interest Jane. Use a bag with a drawstring top so that she may slip her hand in and yet not be able to see the object she is trying to find (fig. 9). Put one object on the table and put an identical one in the bag. Jane can help you do this. Then hold up the airplane and tell Jane, "Find the airplane. Find the airplane in the bag." You will need to find it first and put it beside the other plane. If Jane succeeds, and pulls the airplane out, she may keep it. If not, she must put the wrong object back in the bag. Taking turns is one way to vary this activity. Have Jane point to the object that she wants you to find.

Use blocks of wood of different sizes. Hold up one and have Jane find one like it and put it in the bag. When you have them all in the bag, then hold up one and see if she can find one just like it in the bag.

Let Jane feel fabrics (silk, wool, cotton, etc.) and various kinds of paper.

FIGURE 9.

Teach her to recognize things that are smooth, rough, sticky, wet, dry, cold, hot, sharp, and crumbly. You may make cards with the different contrasting materials pasted on them. Have Jane close her eyes. Take her hand and touch one of the materials. Then she may open her eyes, and see if she can point to the one which she touched. Putting various dry cereals in envelopes and using this in the same manner is another way to help develop Jane's sense of touch.

Jane close her eyes as you remove one of the objects. Have Jane fill in the missing object from those in her box.

2. You may also place objects in corners of the room, or corners of the table. Talk about where you are putting them and where they are as Jane watches. Then get them and see if Jane can put them back in the same places.

3. Pictures can be used in the same way. Put three pictures on the table. After Jane has looked at them, remove them, and have her select three pictures from her pack identical to those which you had and put them on the table.

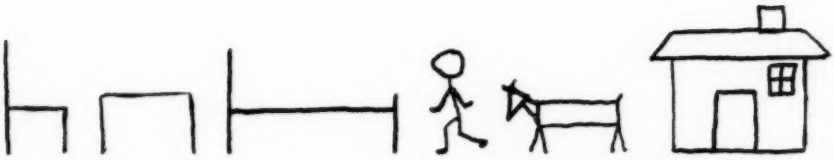
4. Use your chart of various geometric shapes cut out of colored paper and pasted on the chart. Hold up a cut-out, let Jane look at it for a minute, take it away and have her point to the one like it on the chart.

5. Use colored sticks or pick-up sticks. Let her experiment with them at first. Imitate what she does with the sticks. When she has discovered for herself what the materials are, make geometric shapes such as these.

We have said before that Jane must remember what she sees. Here are some games that you can play to train Jane to remember.

1. Give Jane a box containing several objects including objects identical to those which you have in your box. Choose three objects from your box and place them in a row on the table. Look at them, talk about them, and then have

At first she will need to imitate you as you place each stick. Later on let her watch you make all of the design before she goes ahead. She may keep yours in front of her. As she becomes more skilled, make the design and then remove it. See if she can make one like it without the copy. Later, you can make animals, furniture, stick-men in action, houses, etc.



AUDITORY TRAINING

Almost every deaf child has some remnant of hearing. Whatever amount she has, no matter how little, will be of use to her in learning to speak. She needs to become aware of sound so that she may learn to use the hearing that she has.

One way to get a gross idea of her hearing is to check her responses to various loud sounds. You have, no doubt, observed Jane's reactions to sound during examination. To help us in working with her during visits to the hospital, you can work with her at home training her to respond. You must, of course, show her what you expect her to do. At first, use an object that you can hit so that Jane can both see and hear. A spoon and a pie-pan will work or a drum if you happen to have one. Immediately after you hit the pan, drop a marble into a box that has a hole cut in the top. Then hit the pie-pan and help Jane drop the marble in the box (fig. 10). When she understands what she is to do while *both* seeing and hearing, stand behind her and hit the pan so that she must rely only on her hearing. Vary the timing. If you develop a definite rhythm, Jane will know when to expect the sound, and you will not know really whether she is hearing it or not.

You can keep her interest by teaching her to respond in different ways. We have mentioned dropping a marble in the box. Each time she hears the sound, she may throw a bean-bag at a block seeing if she can knock it over (fig. 11), or she may add a block to her block tower. You can use dominoes, beads and

FIGURE 10.

pebbles. Whistles and bells may be used as noisemakers. A few minutes at this is plenty. It is extremely important that she not tire of this activity, since this is our chief way of testing her until she becomes old enough to respond to an audiometric test.

It also will be helpful to us if you will jot down Jane's reactions to different sounds around your home. One day, if she looks up when the car comes up the driveway, write this down. Another day, if she turns around when the telephone rings, or if she looks up as an airplane flies overhead, make a note of this.

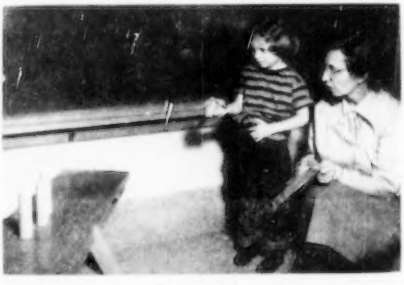


FIGURE 11.

These things will be very helpful to us. However, be sure that you do not continually try to startle Jane. Just make note of any time that she appears to have heard a sound during your day's activities.

Another way to help Jane is to call her attention to vibrations. If you are playing the piano, have Jane place her hands on it. If the radio is on, Jane may be able to feel the vibrations by placing her hand on top or on the side of it. If the vacuum cleaner is going, let her touch it. Set an alarm clock to go off and have her feel that vibration. Hold her in your lap and sing to her. Put her hands on your face, your throat, your chest. She will feel the vibrations. Sing close to her ear. Since we cannot know exactly how much hearing she has, be sure she gets every opportunity to use all of it and to learn to become aware of speech vibrations. When you are talking to her, sometimes take her hand and place it lightly on your cheek with her finger-tips near your cheek-bones. Do this very casually. (Occasionally, place your hand on her face, too.) It is important that she accept this as a matter-of-course because later she will need to use this means of recognizing the small differences in speech sounds. Do not place any emphasis on this by forcing her. If she withdraws her hand, just try again at another time.

In the event that the hospital diagnostic center has recommended amplification, your local radio repairman can attach a set of good quality earphones to your radio or record player. (See diagrams on next page.) The upper diagram is more expensive but it is far less apt to have distortion. It requires the use of high quality phones such as Permoflux and is the more desirable of the two systems.) These should have a separate volume control so that Jane may have the sound at the point where she finds it most comfortable.

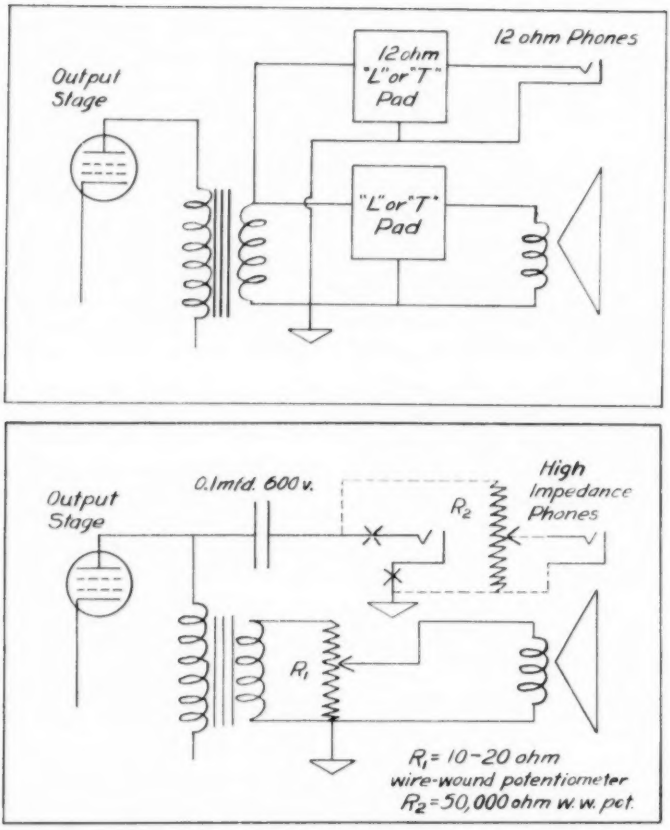
It cannot be stressed strongly enough that the way in which this new experience is presented to Jane is of utmost importance. Be guided by the information given you at the hospital. Do not ever insist that Jane put on the phones and listen. Amplification will be of benefit to her only if she wants to listen and enjoys listening.

It is most important that you consider amplification only if the hospital center has specifically recommended it. Some children are not ready to enjoy it; some children will not have enough residual hearing to profit from it.

INTRODUCING SPEECH

All the time you have been talking to Jane, as suggested previously, you have been introducing speech. It is a very hard thing for the deaf or hard of hearing child to learn that there is such a thing as speech. To teach her to realize its existence, you must talk to her on any and on all occasions just as you would talk to a hearing child. But when you talk to your child with impaired hearing, be sure that she is looking at you, and that the light is shining on your face so that she can see what you say. Help Jane see what you are saying by keeping your face on a level with hers. A part of the time you might stoop down and talk to her or hold her on your lap. Don't make her peer up into your face. Even if a child has a good bit of hearing, its usefulness may be considerably diminished if she is spoken to from the height of the average adult.

A man once said, and no doubt without too much exaggeration, that 75 per cent of one's life goes on behind one's back. See to it that Jane knows what is going on behind her. At first it will be difficult for her to understand why she must look at you when you speak to her. But she will learn eventually that you have something to tell her, that the little



movements on your face concern her. Try to wait until she looks at you before you speak. If you cannot catch her eye, a light touch on the shoulder is all right. Remember, no person (child or adult) likes to be poked or jabbed.

At first she will understand very little of what you say to her. We must remember at all times that a hearing child learns to understand what is said to her. She is not born with an understanding of speech simply because she is able to hear. She learns meanings by associating the phrases that she hears you say with an action that she sees you perform. In like manner your deaf or hard of hearing child learns to associate the words or phrases that she sees you say with an action that she sees you perform. She will not understand even after a long period of time every word that you say. It isn't necessary. But she will learn to see meaning in what you say. That is important. Try to word the phrases that you use in the same way at all times. It is by repetition that Jane will learn; for example, you might use some of these in the course of a day:

It is time to get up!

Come to breakfast, lunch or dinner.

Eat your breakfast, lunch or dinner.
Wash your hands and face.
Comb your hair.
Hang up your clothes.
Pick up your toys.
Shut the door.
It's time for bed.
Good night!

If these phrases, or ones comparable to them, are ones that you use, say them every time that there is an opportunity for Jane to associate a phrase with its action. Don't talk to her any differently from the way you would talk to anyone else. Speak naturally, without exaggerated lip movements, and in a normal tone of voice. At this point, you are not trying to teach speech, as such, but you are trying to teach Jane to realize that speech is her means of communication. At first, the appropriate gesture may accompany the verbal direction, but use it sparingly. One day Jane will surprise you. You perhaps may tell her (without gesture of any kind), "Get your coat," and she will turn and come back with her coat all ready to go.

It might be added in passing, that if one were speaking to a hearing child and asking him to wash his hands, one would add the word "please." In speaking to a deaf child, one is rather apt to drop words that do not have concrete meaning. The reason for this lies in the fact that such words tend to be confusing to the child until he has developed a bit more language.

TEACHING THE NAMES OF OBJECTS

Through your work with sense training, Jane has been gradually preparing to learn that objects have names. This is your next step in teaching her about speech. Here again toy objects and pictures are used. Jane has previously learned to match objects to pictures. She will enjoy doing that with these objects. It is important that they represent things with which she is very familiar. The list might include such things as a dog, a cat, a knife, a fork, a bar of soap (or some soap), an orange, an apple, a tomato, a spoon, a car, a chair, a table, a baby, a tooth brush, a boat, a watch or a clock, a pair of shoes, and a comb.

By going through such magazines as *The Saturday Evening Post, The Ladies Home Journal, Collier's* and others you will find brightly colored pictures which can be cut out and pasted on file cards. Use objects you may have in your home or the toy objects which can be found in the "dime store."

After Jane has matched the objects and the pictures they may be used in these ways:

1. Jane may sit on your lap facing you. Three or four objects or pictures may be placed on the table beside you. The ones chosen first should be those that look the least alike on the mouth. This can be determined by saying the words, as naturally as possible, in a mirror. One might use a knife, a shoe, and a baby. Place Jane's hands on your face as you say the word "knife" (fig. 12). Pick up the knife and show her that the word and the object go together.

2. Show her the words on your mouth without having her feel your face (fig. 13).

3. Follow the same procedure with the word "shoe" and the word "baby."

4. As you introduce each new object say the word into her ear in a normal tone of voice (fig. 14). Encourage imitation. The chances are that these words may be familiar to her by now (after you have used them often in your everyday routine) and she may voluntarily attempt imitation. Accept whatever she

FIGURE 12.

says and respond with enthusiasm. Perhaps it may help to give her the idea if, after you have said the word in her ear, you show her your ear and indicate that she is to say the word into your ear.

5. When you feel sure that Jane knows what you are saying, have her point to the object whose name you say. Show your approval when she does well.

Small cards can be made showing stick-men performing such actions as running, jumping, hopping, etc. Show Jane the picture card. Tell her, "The boy is jumping. I'll jump. I'm jumping. You jump. You jumped." Later you may tell her "jump" and then show her the card immediately afterward. After she has seen the word on your lips many, many times and connected it with the action, one day she will respond only to the word. You will not need to show her the picture of the little stick-man as a clue. Other directions which you may use are sit down, clap your hands, kick the ball, comb your hair, close your eyes, brush your teeth, shut the door.

FIGURE 14.

FIGURE 13.

It will not be possible for you to work with Jane for long periods of time. Never force her. You will do well to hold her attention for a very few minutes at first. See to it that she enjoys her lesson. She will have to have a great many before her speech is very useful to her. Gradually as you add more objects and pictures to your collection you will be able to increase the time that you work. It is a good idea to set aside a given time every day for the lesson. Just before lunch you might sit down with her for a

few minutes. Try to have a definite "lesson place." Show her the clock. Tell her, for example, "The clock says 11 o'clock. It's time for our lesson." Try not to have interruptions. If you work in the same place, at the same time every day, Jane will come to look forward to it, and expect it as a part of her day.

Find the objects you need and put them on the lesson table. It is a good idea to keep your lesson materials for use only at lesson time. Do not allow her to play with them at other times. She then will regard them as something special and will be eager to come and play. This also permits you to see that the material is used as you wish it to be. She must learn to take directions from you. When new materials are first introduced, let Jane handle them and play with them without direction for a short time. When she has "explored" them, she will be ready to use them as you direct.

From the beginning it is helpful to keep a journal in which to record Jane's progress. This need not be elaborate—just a little five cent notebook will be fine. When she has learned to match three colors, write it down. When she is able to match four objects to four identical pictures, or when she understands, "Get your coat," make a note of it. Refer to your journal often. Use it as a means of checking and measuring her progress. Go over old expressions. Be sure that she is keeping them in mind. And when you add a new one, be sure to say it over and over until you are sure that she has it. In six months you will look back and be amazed at how much you have done. Progress seems slow from day to day. It is. But Jane is learning fundamental ideas about speech that she will carry with her all her life. The whole business is not easy for her. Be patient with her.

Review old activities and introduce only one at a time. If she is not responding well to an activity, try to figure out why. Is it too easy? Is it too hard? Doesn't she understand what she is to do? Be sure that the time spent together in your lessons is fun for both of you. If Jane develops a poor attitude toward her lesson, this will be very hard to break down, and it will reflect in everything you try to teach her.

In choosing your lesson materials, be guided by a child's interests, for example, himself, the things that she does, the food that she likes, the toys with which she plays and the clothes which she wears.

Give Jane an opportunity to "show Daddy" when he comes home. She will be proud to show him the new things she is able to do, the new games that you played. This not only provides another practice situation, but will serve as excellent motivation.

When you talk to Jane, make it meaningful. Be sure that she is getting the idea. Remember that she must understand ideas before she will attempt to give back speech. She will give back speech as she feels a need for it. Talk about what you are going to do, what you are doing, what you did. If she doesn't understand, show her what you mean by situations, pictures, or actions.

If you are going to the store together, show Jane the things that you need to buy. At home, let her help put things away. Tell her, "Put the corn on the top shelf." Show her the top shelf. Continue showing and using the same expressions each time until you are sure that she understands. Later she will learn to use them herself. You might make a page in an "Experience Book" when you get home, drawing Jane and Mother going to the store. Paste or draw pictures in the book of things that

you bought, of the man helping Mother, riding home in the car, and stopping for an ice cream cone. She can use this page to show her daddy when he comes home. This need not be elaborate. Stick figures are easiest to draw and Jane will enjoy them a great deal. The next day look at the book again and talk about what you did yesterday.

One of our parents sat down with his little boy and drew the pictures reproduced here after they had returned from a week-end trip to the grandparents. As the father drew the pictures, he talked about them pointing out and naming the persons and objects. This picture story formed the basis for a lot of conversation and provided an opportunity to use the same sentence forms repeatedly.

In the first drawing in the upper left-hand corner the family (mother, father, Butch and baby brother) are starting on their trip to visit the grandparents. It is snowing. In the next drawing they have arrived, the sun is shining and the family is at the door to greet them. On Saturday Grandma and her cat are shown on the step, and Butch and baby brother are shown talking to Grandma.

At night, baby brother sleeps in the crib, Daddy and Butch in the big bed. On Easter morning Butch wakens to find an airplane and an Easter basket beside his bed.

The children enjoy an Easter egg hunt. Then the family leave in the car to have Easter dinner with Butch's other grandma and grandpa. The family is shown as they were seated at the table, baby brother Stanley in the big high chair.

Grandma gives an Easter rabbit to Butch and Grandpa finds a hobby horse for Butch in the clothes closet.

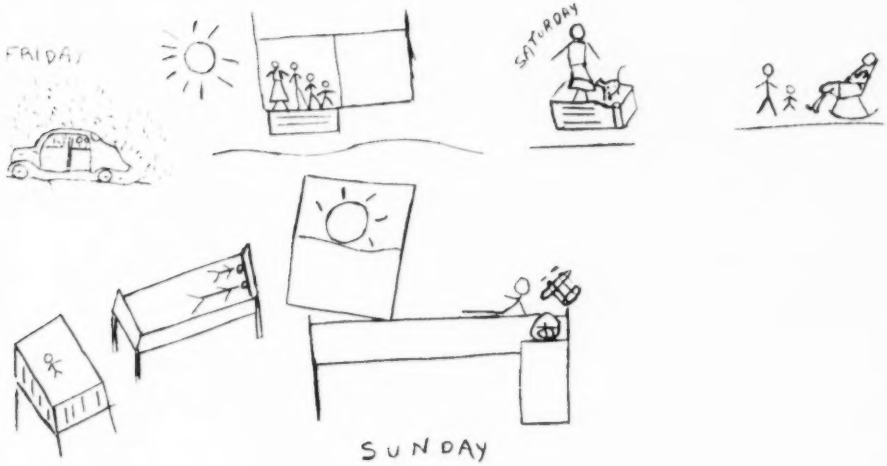
The last drawing shows the family returning home.

The child brought the picture to show his teacher and it was talked about for several days thereafter. Through the pictures, the child could relate what had happened to him, and enjoy that same experience over again with others. One day you may find Jane attempting to tell you about the pictures. Show your pleasure in her attempts. Make your pictures large at first and in story sequence. Her interest will grow as she learns to relate these pictures to herself.

Play as many games with the whole family as you can. Playing "Object Lotto" or hiding-finding games with various objects will be tremendously interesting to Jane when everyone is playing. The loved feeling and the feeling of belonging which Jane gets when she can participate with her whole family in some activity is well worth the effort.

Have a story time when she takes her afternoon nap or when she is tucked in bed at night (fig. 15). Books with large simple pictures on every page are preferable. The pictures will help serve as explanation for whatever you are telling her. At first you will have to simplify the stories. Later on, when she becomes more familiar with them, you can tell more about them. You may have to shorten the story to keep her attention, so much so that you think there's no story left. The important thing to remember is that you are teaching that each picture tells something. At first, it's only a simple sentence naming the object. Later you can add, "See the boat. The boat goes in the water. Here's a boy. A boy is in the boat." Children love repetition. The same books talked about over and over again continue to hold their interest. Have several books about the same story. Since she knows the story, the different pictures will have meaning for her.

Use the same expressions, phrases, sentences and words you teach her in


FRIDAY
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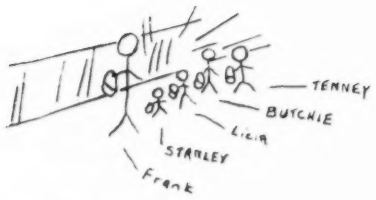
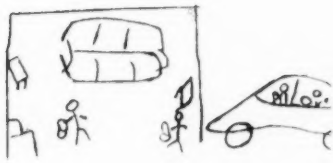
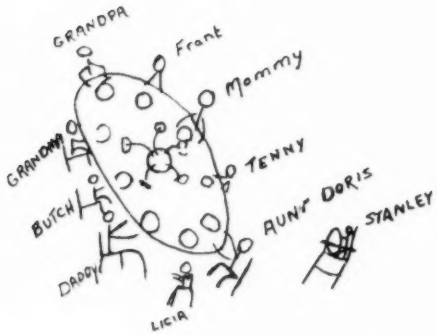
SUNDAY


TENNEY
BUTCHIE
LICIA
STANLEY
Frank




GRANDPA
Frant
Mommy
GRANDMA
TENNY
BUTCH
AUNT DORIS
STANLEY
DADDY
LICIA

IOWA CITY

FIGURE 15.

your lessons as much as possible throughout the day; like, "Jane, *bring* me a pencil. There's a pencil *on* the table. *Find* Daddy. It's time for dinner. Do you want your red socks or your blue socks? Bring me your coat *and* your cap."

You might have a "Family Book" with snapshots of all of the family, of Jane and her birthday cake, of her brothers and sisters, of Jane's pet dog, etc. Sometimes when she cannot make you understand she can go and find one of her pictures to help you know what she is trying to tell you.

Don't fall into the habit of using voiceless speech. Remember we must provide Jane with every possible chance to make use of whatever sound she may receive, no matter how little. When you talk to Jane, don't use long complicated sentences; like, "Oh, I forgot the car key and I'll have to run back in the house and look for it." Instead tell Jane, "I don't have the key. I'm going in the house. Come with me. Help me find the key."

Keep in mind at all times that the reason back of all the training attempted during this period is to teach Jane that speech is her means of communication. At first, she will probably not attempt to imitate anything you say. Gradually she may attempt speech. Don't expect perfect imitation. Remember way back at the beginning of this discussion we said that a hearing baby tries and tries before even the word "mama" is intelligible. Accept anything that Jane gives you by way of imitation. Encourage her to try and try again. The deaf child has a real job before her in learning to talk. Be patient with her in her efforts. You, as parents, can't go much further than the foregoing in teaching Jane to speak. The teaching of the elements of speech is the job of a trained teacher. Each sound must be developed. The vowels and consonants must be put together. Various combinations must be made into words. The words must be combined into meaningful language. But the thorough job of preparation that you do at home will go far in making the learning of speech successful.

If there is a nursery school in your community where the people in charge understand that Jane is a perfectly normal child who doesn't hear, it will be helpful to send her. She will learn to play with other children. She will be exposed to speech in a social situation which will serve to show her in another way how speech is her means of communication. In our community, Bill, a three-year-old deaf boy, was enrolled in a pre-school for normally hearing children. He played side by side with the others for two months before any of the children questioned the director about why he didn't talk as the other children did. You see, children of two to three years of age rarely converse with one another.

When she reaches school age it would be well to have her examined again by an otologist. At this age it may be possible to get a fairly good estimate of her hearing. If her speech is not developing

naturally with the added stimulation given in the home, it would be wise to investigate your own state school for the deaf. There is at least one such school in every State in the Union. If you would rather not send her to a State School, there are many excellent private schools for the deaf in the country. The Volta Bureau has information available concerning these schools. In many cities there are special day schools for the deaf under the direction of the Departments of Special Education in those cities. These schools are open to residents of the community. So, you see, when Jane is ready to go to school there will be one which can handle her special needs. Your responsibility, as a parent, is to find the school and see to it that it is the best one available.

BIBLIOGRAPHY

Here are some lists of books which you may find helpful, names of records which Jane may enjoy, and addresses of places where you may write for information.

BOOKS CONTAINING USEFUL INFORMATION

1. Myklebust, Helmer: Your Deaf Child, Charles C. Thomas, Publisher, Springfield, Illinois, 1950.

2. Van Riper, C.: Teaching Your Child to Talk, Harper & Bros., 1951. (This is about the hearing child. Much of it, however, pertains to Jane.)

3. Ewing, Irene R. and Ewing, Alex W. F.: Opportunity and the Deaf Child, University of London Press, 1947. (May be obtained through the Volta Bureau.)

4. Lassman, Grace H.: Language for the Pre-School Deaf Child, Grune & Stratton, Publishers, 1950.

5. Illinois Annual School for Mothers of Deaf Children: If You Have a Deaf Child, Interstate Press, Danville, Illinois, 1949.

BOOKS JANE WILL ENJOY

1. Utley, Jean: What's Its Name? University of Illinois Press, 1951.

2. The Little Golden Books, published by Simon & Schuster, New York, can be obtained at nearly every drugstore or bookstore. The following books are examples of the many excellent ones available:

a. Busy Timmy (Timmy is a little boy dressing himself and playing just like Jane plays. This book will be good for conversation about her activities.)

b. Where Is Farmer Jones? (This book is good for naming animals, associating noises animals make and stimulating conversation and observation about what animals eat, what Jane likes to eat, etc.)

c. Noises and Mr. Flibberty-Jib (This has a little Golden Record to go with the story, and may be used to interest Jane in various noises.)

3. Picture Dictionaries are useful for naming objects and such conversation as "Here's a picture of a bike. Show me your bike. Your bike is red." The following are recommended:

a. My Little Golden Dictionary by Reed and Osswald.

b. The Little Golden Book of Words by Selma Chambers. (a. and b. both published by Simon & Schuster, New York.)

c. My First Picture Dictionary illustrated by Dorothy Grider, published by Wilcox and Follett Co., Chicago.

There are several larger, more elaborate picture dictionaries which may be useful. For example, one published by Grossett-Dunlap, the other by Simon & Schuster.

PLACES YOU MAY WRITE FOR INFORMATION

1. The Volta Bureau, 1537 35th Street, N. W., Washington 7, D. C. This organization publishes a magazine concerning itself with the education of deaf and hard of hearing children called the *Volta Review*. It is published monthly. This bureau makes available reprints of articles at a nominal fee. The following reprints are recommended reading:

a. "Letters to the Mother of a Deaf-Born Child" by Harriet Montague.

b. "To Parents of Little Deaf Children" by The Staff of the Lexington School for the Deaf.

c. "What the Parent Can Do for the Pre-School Child" by Mary C. New.

The bureau also maintains a lending library where books pertaining to the deaf may be borrowed. They are sent to you for the cost of mailing.

2. The John Tracy Clinic, 806 West Adams Blvd., Los Angeles, California. The John

Tracy Clinic, upon receipt of your request, will send you The John Tracy Clinic Correspondence Course in twelve monthly installments. This is free to all parents of little deaf children. Your only obligation will be to write to the clinic each month concerning your progress with Jane and asking any questions which you may have. In return, you will receive a personal letter discussing what you have done and answering your questions. If you do not write each month, the course will be discontinued. This is the only way the clinic has of being sure the material is used and guiding you in its use.

*RECORDS

1. Marches and waltzes are excellent because of their definite rhythm.

2. Singing records of Mother Goose melodies.

3. Bozo at the Circus, Capitol Records (This has pictures to go along with the record and is good for animal noises.)

4. When The Sun Shines and When It Rains, Young People's Records, Inc. (These are especially well suited to use with appropriate actions. Sing the song along with the record so that Jane gets the benefit of both seeing and hearing.)

5. Genii, The Magic Record, Decca, DV 90002.

When you go into a record store, check to see if there are others which would be appropriate. Keep in mind that simple records are best. Select those with definite rhythm and those which are about things Jane knows. It's a good idea to draw or find pictures which will help Jane understand what each record is about. Some have picture books that go along with the records. These are excellent.

*To be used if amplification has been recommended.

News - - - Notes

FIFTH INTERNATIONAL CONGRESS OF OTO-RHINO-LARYNGOLOGY

During the Fifth International Congress of Oto-Rhino-Laryngology in Amsterdam, June, 1953, the invitation of Dr. Louis Clerf and Dr. Paul Holinger, delegates from the United States, to hold the Sixth Congress in the United States was accepted. The exact date of the meeting has not yet been set.

INTERNATIONAL SYMPOSIUM ON GENERAL PHYSIOLOGY AND PATHOLOGY OF THE EYE

Following the International Congress of Ophthalmology and the meeting of the American Academy of Ophthalmology and Otolaryngology in New York an International Symposium of the General Physiology and Pathology of the Eye will be held at the Department of Ophthalmology, College of Medicine, State University of Iowa, in Iowa City, Iowa.

This symposium will be held on September 24 and 25, 1954. The following guest speakers will participate: G. von Bahr (Sweden), G. B. Bietti (Italy), J. Boeck (Austria), H. Henkes (Holland), G. B. J. Keiner (Holland), H. K. Mueller (Germany) and E. Wolff (England). All papers and discussions will be in English. The detailed program will be announced at a later date.

NINETEENTH INTERNATIONAL CONGRESS OF OTO-NEURO-OPHTHALMOLOGY

The Nineteenth International Congress of Oto-Neuro-Ophthalmology will be held in Sao Paulo, Brazil, from June 11 to 17, 1954, with other scientific Congresses and commemorations which will take place to celebrate the fourth Centenary of the city of Sao Paulo.

The official themes to be presented by great national and international specialists are: (1) Metabolical and Avitaminotic Disturbances in Oto-Neuro-Ophthalmology, (2) Physiopathology of the Facial Nerve.

The official languages are Portuguese, Spanish, English and French.

The Pan-American Congress of Ophthalmology and the Eighth Brazilian Congress of Ophthalmology will be held at the same time in Sao Paulo. The payment of membership of one of the three Congresses includes the other two.

Inquiries or suggestions about the Congress should be addressed to Clinica Oftalmologica, Hospital das Clinicas, Sao Paulo, Brazil.

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

Better ways for the blind to read, walk, and communicate will be discussed by research authorities in the field at a symposium on "Communication Aids for the Blind" to be held in conjunction with the 120th Meeting of the American Association for the Advancement of Science on December 28, 1953, in Boston.

SECTION IN OPHTHALMOLOGY, A.M.A. AND ASSOCIATION FOR RESEARCH IN OPHTHALMOLOGY

The 1954 meeting of the Section on Ophthalmology will be held in San Francisco, June 21-25, 1954. Again the Section will meet simultaneously with the Association for Research in Ophthalmology.

Anyone wishing to present a paper before the Section on Ophthalmology is urged to communicate with Dr. Harold G. Scheie, Secretary of the Section, 313 S. 17th St., Philadelphia 3, as soon as possible. A title and abstract must be in his hands by January 1, 1954.

Anyone wishing to apply for space in the Scientific exhibit of the American Medical Association should contact Dr. William F. Hughes, Jr., 1853 W. Polk St., Chicago 12.

Anyone wishing to present a paper before the Association for Research in Ophthalmology should communicate with Dr. Lorand V. Johnson, Secretary of the Association, 10515 Carnegie Ave., Cleveland 6, as soon as possible.

Members are reminded that their contributions to the Knapp Fund are now due and payable to Dr. Parker Heath, 243 Charles St., Boston. A $10.00 contribution entitles you to a volume of the 1953 Transactions. Contributions in excess of $10.00 are invited.

The East Central Section of the Association for Research in Ophthalmology will meet on Monday, January 4, 1954, at the Mellon Institute in Pittsburgh, Pa.

The Scientific Program include these papers: "Experimental Iso-Allergic Uveitis in Rabbits," T. Suie, Ph.D., M. C. Dodd, Ph.D., H. Farmer, M.D., W. D. Rummel, M.D. and A. M. Culler, M.D.; "Ocular Affections Produced by Trigeminal Nerve Lesions," Donald J. Lyle, M.D.; "Ophthalmological Manifestations of Primary Amyloidosis," Harold F. Falls, M.D.; "Structure of the Visual Cells as Demonstrated by the Phase Microscope and the Electron Microscope," Roy W. Teed, M.D.; "Research in Photoreceptors," Jerome J. Wolken, Ph.D.; "An Experimental Study of Electroretinography: The Electroretinogram in Experimental Animals Under the Influence of Methanol and its Oxidation Products," J. Praglin, R. Spurney, and A. M. Potts, M.D.; "Studies on the Visual Toxicity of Methanol: The Role of Acidosis in Experimental Methanol Poisoning," A. P. Gilger, M.D. and A. M. Pots, M.D.; "Studies on the Visual Toxicity of Methanol: The Clinical Picture of Methanol Poisoning in Monkeys Treated with Base," A. M. Potts, M.D.; "An Evaluation of Di-Ethyl-P-Nitrophenyl Phosphate (Mintacol), A New Anticholinesterase Agent," Raymond L. Brewer, M.D. and Jay G. Linn, Jr., M.D.; "Multiple Stress and Intraocular Hypertension," Ernst Schmerl, M.D. and Bernhard Steinberg, M.D.; "Localization of the Effect of Galactose in the Production of Cataracts," John W. Patterson, M.D., Ph.D.; "A New Method for Studying the Equatorial Region of the Crystalline Lens," Harvey E. Thorpe, M.D.; "A Study of Dynamic Visual Acuity," Elek Ludvigh; "Standardization of Optotypes," J. H. Prince; "Sensitivity Variations in the Visual Field as a Function of Background Luminance," H. R. Blackwell, Ph.D. and A. B. Moldauer; "A New Scintillation Probe for Use in Ophthalmology," Joseph F. Nechaj; "Effect of Alcohol on Binocular Vision," Gerhard A. Brecher, M.D., E. Q. Adams, A. P. Hartman, and D. D. Leonard; "A Self-Recording Tangent Screen," William U. McReynolds, M.D.; "Comparison of Standard and Flicker Perimetry," William H. Havener, M.D. and John W. Henderson, M.D. and "Anatomy of the Macula and Visual Phenomena Related to Its Structure," David Volk, M.D.

THE AMERICAN LARYNGOLOGICAL, RHINOLOGICAL AND OTOLOGICAL SOCIETY, INC.

The Mid-Winter Section Meetings of the American Laryngological, Rhinological and Otological Society, Inc., have been scheduled: The Eastern Section Meeting will be held at the Waldorf-Astoria in New York on January 8, 1954. On January 16 the Southern Section Meeting will be held at the Brown Hotel, Louisville, Ky.; on January 18 the Middle Section Meeting will be held at the Park Plaza Hotel, St. Louis, Mo.; and on February 6 the Western Section Meeting will meet at the University of Oregon Medical School, Portland, Ore.

The Council Meeting will be in New York, at the Waldorf-Astoria, on January 9, 1954.

Dr. C. Stewart Nash, Secretary of the American Laryngological, Rhinological and Otological Society, Inc., also announces the following meetings to be held at the Statler Hotel in Boston: American Laryngological Association, May 20 and 21; American Laryngological, Rhinological and Otological Society, Inc., (mornings only) May 25 to 27; and the American Broncho-Esophagological Association, (afternoons only) May 25 and 26.

CALIFORNIA

The Research Study Club of Los Angeles announces its Twenty-Third Annual Mid-Winter Clinical Convention in Ophthalmology and Otolaryngology, January 18 through 29, 1954. The guest lecturers for otolaryngology will be Dr. Lawrence R. Boies and Dr. Jerome A. Hilger of the University of Minnesota; Dr. Paul H. Holinger of the University of Illinois, and Dr. Lewis F. Morrison of the University of

California. In ophthalmology the guest lecturers will include Dr. Daniel B. Kirby, Professor of Ophthalmology, New York University, New York City; Dr. Frank D. Costenbader of Washington, D. C., and Dr. George N. Hosford of San Francisco.

The first week, January 18 to 23, will be devoted to otolaryngology. The ophthalmology section will begin Monday, January 25, and end on January 29.

The fee for the Clinical Course is $100.00. Fees should be sent to Pierre Viole, M.D., Treasurer, 1930 Wilshire Boulevard, Los Angeles 57, Calif.

The Los Angeles Society of Ophthalmology and Otolaryngology held a dinner meeting on September 28. Taking part in the program were Dr. H. J. Hara, the subject of whose paper was "Resume of the European Meetings," Dr. Wilmer C. Hansen, who discussed "Open Reduction of Mandibular Fractures," and Dr. William F. House, whose subject was "Case Presentation of Multiple Fractures of the Face."

Dr. Peter C. Kronfeld, Professor of Ophthalmology, University of Illinois School of Medicine, will give the Eighth Francis I. Proctor Lecture at the Ophthalmological Conference, scheduled for December 2 through 5, 1953, at the University of California School of Medicine, San Francisco.

Dr. Frederick C. Cordes, Clinical Professor of Ophthalmology, University of California School of Medicine, is chairman of the Conference.

Stanford University School of Medicine will present the annual postgraduate conference in Ophthalmology from March 22 through March 26, 1954. Registration will be open to physicians who limit their practice to the treatment of diseases of the eye; or eye, ear, nose and throat. In order to allow free discussion by members of the conference registration will be limited to thirty physicians.

Instructors will be Dr. A. Edward Maumenee, Dr. Dohrmann K. Pischel, Dr. Jerome W. Bettman, Dr. Max Fine, Dr. Earle H. McBain, and Dr. Arthur J. Jampolsky.

Programs and further information may be obtained from the Office of the Dean, Stanford University School of Medicine, 2398 Sacramento Street, San Francisco 15, Calif.

FLORIDA

The eighth annual University of Florida Midwinter Seminar in Ophthalmology will be held in January, 1954, convening January 18 and continuing through January 23. As in previous years, Miami Beach will be the host city.

The lectures on ophthalmology will be presented on January 18, 19 and 20, and will include such distinguished teachers as Dr. W. B. Anderson, Durham, N. C.; Dr. W. P. Beetham, Boston, Mass.; Dr. W. C. Owens, Baltimore, Md.; Dr. A. B. Reese and Dr. M. C. Wheeler, both of New York City.

Outstanding otolaryngologists who will lecture on January 21, 22 and 23 are Dr. E. N. Broyles, Baltimore, Md.; Dr. H. P. House, Los Angeles, Calif.; Dr. W. J. McNally, Montreal, Canada; Dr. Dorothy Wolff and Dr. D. Woodman, both of New York City.

On Wednesday afternoon, January 20, all registrants are cordially invited to attend the Midwinter Convention of the Florida Society of Ophthalmology and Otolaryngology, which meets concurrently with the Seminar.

The registration fee for the Seminar is $40.00. A check for $10.00 payable to the University of Florida Midwinter Seminar, must accompany your application, which should be sent to Dr. Walter T. Hotchkiss, 541 Lincoln Road, Miami Beach, Fla.

ILLINOIS

Dr. Sanford R. Gifford is to be honored as a former member of Passavant Memorial Hospital's medical staff who made distinguished contributions to medicine while practicing, teaching and conducting research at the Hospital.

A Commemorative Unit dedicated to Dr. Gifford will be part of the new ten-story South Pavilion addition to the Hospital, for which funds are currently being raised.

Mr. Eugene Holland is serving as Chairman of the Sanford R. Gifford Commemorative Fund. He is to be assisted by Guy Kiddoo and C. Louis Meyer. The financing of the various Commemorative Units among the friends and colleagues of the doctors to be honored will be coordinated with the Building Fund under the direction of Gilbert H. Scribner, Jr.

Dr. Gifford was Professor of Ophthalmology at Northwestern University Medical School and Chairman of the Department of Ophthalmology. He was also head of the Department at Passavant. He held many offices in professional organizations, including that of President of the Chicago Ophthalmological Society and First Vice President of the American Academy of Ophthalmology and Otolaryngology. His two textbooks **Ocular Therapeutics** and **Textbook of Ophthalmology** are widely used. He was awarded, posthumously, the Howe Medal for research in ophthalmology.

Passavant Hospital was founded in 1865. It is affiliated with Northwestern University Medical School in a continuous program of teaching and research. Every member of its staff is also a member of the Medical School faculty.

The new building will provide the Hospital with 100 more beds, as well as with more teaching beds. It will also provide greatly improved facilities, teaching and laboratory space with specialized areas for various departments.

The cost of the new South Pavilion, including extensive remodeling within the Hospital, will be $3,000,000. More than half of the amount needed has already been subscribed by individuals, firms, and foundations.

LOUISIANA

The mid-winter convention of the New Orleans Academy of Ophthalmology is featuring a Symposium on Infectious Diseases of the Eye on February 1 through 5, 1954. On the program will be Dr. Phillips Thygeson, San Jose, Calif.; Dr. Trygve Gundersen, Boston, Mass.; Dr. Alson E. Braley, Iowa City, Iowa; Dr. Hugh Ormsby, Toronto, Ont.; Dr. Michael J. Hogan, San Francisco, Calif.; and Dr. Gustav Bahn and Dr. James H. Allen, both of New Orleans, La.

The registration fee of $75.00 includes associate membership in the academy for the year 1954.

MARYLAND

The Thirteenth Clinical Meeting of the Wilmer Residents Association will be held at the Wilmer Ophthalmological Institute of The Johns Hopkins Hospital on April 1, 2 and 3, 1954.

MISSOURI

The St. Louis Ophthalmological Society will hold meetings on the following Thursdays of this fiscal year: October 22 and December 3, in 1953 and January 28, February 25, March 25, and April 22, in 1954, at the Park Plaza Hotel, 220 N. Kingshighway, St. Louis, Mo.

NEW YORK

The Brooklyn Ophthalmological Society held its regular meeting on Thursday evening, October 8, 1953. Included on the program were papers by Dr. Arthur E. Sherman, "Ptosis Surgery"; Dr. Nicholas P. Tantillo, "Presentation of Two Cases of Intraocular Mass"; and Dr. J. Arnold de Veer, "Discussion and Pathological Presentation."

Dr. Arnold H. Knapp, Professor Emeritus of Ophthalmology at Columbia University and Consultant at The Presbyterian Hospital, is one of twenty-five individuals who will receive Distinguished Service Awards in connection with the twenty-fifth anniversary of the Columbia-Presbyterian Medical Center on October 12 and 13. The awards, first of the kind ever made by the institution, will commemorate the contributions by Dr. Knapp and his colleagues to the growth and development of the Medical Center.

Dr. Knapp, who was graduated from Columbia University College of Physicians and Surgeons in 1892, has a service record of fifty-eight years in medical science. In 1932, Dr. Knapp received an honorary Doctor of Science degree from Columbia.

A leader in the field of ophthalmology, Dr. Knapp served as Executive Director of the Herman Knapp Memorial Eye Hos-

pital, founded by his father, until its merger with the Institute of Ophthalmology of The Presbyterian Hospital in 1940. He created the Knapp Memorial Foundation for the advancement of postgraduate teaching, study and research in ophthalmology. Chief Editor of the "Archives of Ophthalmology" for forty years, Dr. Knapp has written extensively in his clinical field. A past president of the American Ophthalmological Society, he has also been an honorary member of foreign societies. In 1941, The National Society for the Prevention of Blindness presented him with the Leslie Dana Gold Medal.

Dr. Grayson Kirk, President of Columbia University, and Charles P. Cooper, President of Presbyterian Hospital, will make the award presentations at an academic convocation on October 13. This event climaxes a two-day scientific and and social program to mark the twenty-fifth anniversary of the dedication of the Medical Center.

The guest speaker at the November 2, 1953, meeting of the New York Society for Clinical Ophthalmology will be Norman Ashton, Director of Pathology of the Institute of Ophthalmology, University of London. His paper is entitled "Some Anatomical Factors in the Genesis of Ocular Disease."

The Department of Ophthalmology of the State University of New York Medical Center at Syracuse will present its fourth annual postgraduate course in ophthalmology at the Hotel Syracuse, Friday and Saturday, December 11 and 12.

The following guest lecturers will participate: Dr. Alan C. Woods, Dr. Harold F. Falls, Dr. Hunter H. Romaine, and Dr. Franklin M. Foote.

The tuition fee will be $25.00, payable to the State University of New York Medical Center at Syracuse, Irving Ave., Syracuse, N. Y. This fee covers tuition, daily luncheons and dinner Friday night. The course will be limited to 60 members. These will be accepted in the order in which applications accompanied by checks are received. Inquiries regarding the course may be addressed to Harold H. Joy, M.D., 504 State Tower Building, Syracuse, N. Y.

Dr. Alan C. Woods, ophthalmologist-in-chief at Johns Hopkins Hospital, Baltimore, will speak on "The Diagnostic Problem in Uveitis" for the seventh annual Mark J. Schoenberg Memorial Lecture at the New York Academy of Medicine at 8 p.m., Monday, December 7, 1953.

The lecture is presented annually by the New York Society for Clinical Ophthalmology and the National Society for the Prevention of Blindness in memory of Mark J. Schoenberg, who died in 1945. Dr. Schoenberg was chairman for several years of the National Society's Committee on Glaucoma, and was deeply interested in the subject of uveitis.

PENNSYLVANIA

The 136th Meeting of the Reading Eye, Ear, Nose and Throat Society was held on September 16, 1953 at the Wyomissing Club, Reading, Pa. Approximately 35 physicians attended the meeting.

The speaker of the evening was Dr. A. Gerard DeVoe, Professor and Chairman, Department of Ophthalmology, New York University Post-Graduate Medical School. Dr. DeVoe presented an illustrated lecture on the subject of "An Evaluation of Plastic Procedures About the Eye."

A Study Club was conducted on the subject of "Epistaxis." Dr. Marvin Rothenberger, Allentown, was the Moderator. The following were instructors: Dr. John J. Penta and Dr. Philip R. Wiest, Reading.

SOUTH CAROLINA

Dr. Thomas R. Gaines, an ophthalmologist of Anderson, S. C., has been elected President of the South Carolina Medical Association for the coming year.

TENNESSEE

The Memphis Society of Ophthalmology and Otolaryngology will hold its annual convention on February 6, 7 and 8, 1954. Guest speakers will be Dr. Daniel Kirby, Dr. Charles A. Perera, and Dr. John M. Converse, all of New York, N. Y.; Dr. Lewis F. Morrison, San Francisco, Calif.; Dr. Jerome A. Hilger, St. Paul, Minn.; and Dr. Kenneth C. Swan, Portland, Ore.

AUSTRIA

The Vienna Ophthalmological Society will celebrate their fiftieth anniversary on June 21 and 22, 1954. All ophthalmologists are cordially invited to attend.

CUBA

The Liga contra la Ceguera of Cuba will open a new school of specialization in ophthalmology in Havana. The studies with theoretical and practical training will consist of two years, in addition to which a postgraduate course of one year will be given. Dr. Tomas R. Yanes is appointed head of the school. The first course will start in July, 1954, consisting of four semesters up to a total of 800 hours. The tuition is $500.00 payable in two semesters, $250.00 each. The school has no dormitories. The first matriculation is restricted to 20 candidates, including Americans and Latin-Americans, 35 years old and with practice for less than 5 years. Further information should be obtained from the Secretary of the School, Dr. M. Farinas Pelletier, Liga contra la Ceguera, Apartado de Correos 4053, Havana, Cuba. Blanks for inscription should be requested before May 31, 1954. The Liga has its proper Hospital. Near the hospital there are residential homes in which the students can have room and board for $50.00 a month.

ENGLAND

The Annual Congress of the Ophthalmological Society of the United Kingdom will be held in the Department of Chemistry, University of Durham, Newcastle-on-Tyne, on April 22 through 24, 1954.

The subject for discussion will be "Inflammatory Vascular Diseases Affecting the Eyes." This will be opened by Mr. R. C. Davenport, Dr. S. P. Meadows and Professor J. B. Duguid. Members who wish to take part in the subsequent discussion are advised to intimate their intention before the opening of the Congress. It is emphasized that no member may speak for more than ten minutes.

There will also be three short symposia on the following subjects: "Cyclodiathermy," "Changes in the Incidence of the Eye Affections of Coal Miners in the Past 25 Years," and "Gonioscopy."

Members wishing to read a short paper are asked to send the title, together with an abstract, to Mr. Arthur Lister, 45 Lincoln's Inn Fields, London, W. C. 2, not later than December 31, 1953. Those wishing to show films should also communicate with Mr. Lister by the same date.

The Annual Dinner will be held at the Royal Station Hotel on Thursday, April 22. Members may bring guests.

A Civic Reception will be held at the Laing Art Gallery on Friday, April 23, at 9 p.m.

A trade exhibition will also be arranged during the meeting.

The following hotels are within easy reach: Royal Station, Royal Turk's Head, Grand and County.

POSITIONS AVAILABLE

Residents in Ophthalmology: Veterans Administration Hospital, Houston, Texas; two years, one opening. Hermann Hospital; one or two years, one opening. Basic course required in both positions. For information write Dr. E. L. Goar, 1304 Walker Ave., Houston, Texas.

A vacancy is available for a Resident in Otolaryngology at the Veterans Administration Hospital, 130 West Kingsbridge Road, Bronx, N. Y. It is approved for three years and is supervised by representatives of the Dean's Committee of the affiliated medical schools. This residency consists of a Basic Science Course given at the expense of the Veterans Administration, instruction is also given in Endoscopy, Allergy, Plastic Surgery of the Nose, as well as Head and Neck Surgery. Salary ranges up to $3300 per year. Veterans are preferred but others are considered.

For further information write to: Liaison Officer, Dean's Committee, Veterans Administration Hospital, 130 West Kingsbridge Road, Bronx, N. Y.

Information regarding a RESEARCH FELLOWSHIP IN OPHTHALMOLOGY at Indiana University Medical Center may be obtained by writing to Dr. T. F. Schlaegel, Jr., 110 West Michigan St., Indianapolis 7, Ind. It is not necessary to have had training in ophthalmology to be accepted for this position. For those who have not had a graduate course in ophthalmology, the fellowship will provide some training prior to a residency. Fellows assist in the eye clinic and at eye surgery and attend the formal classes for eye residents. The stipend is $1800 per year plus room and laundry.

Listings of positions available should be sent to W. L. Benedict, M.D., 100 First Avenue Building, Rochester, Minn., by the fifth of the month preceding publication. They should include (1) type of physician wanted (ophthalmologist or otolaryngologist; diplomate, resident, etc.); (2) type of position to be filled; and (3) whom to write for further information. Unless otherwise requested, listings will be published once only.

The Academy will handle no further correspondence beyond the listing and assume no responsibility. Neither does it endorse or guarantee any of the published listings.

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J. A. Ph., A., (Sc. Ed.) 35:304, 1946.

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